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TO

SOWERBY'S MODELS

OF

BRITISH FUNGI

IN THE

DEPARTMENT OF BOTANY

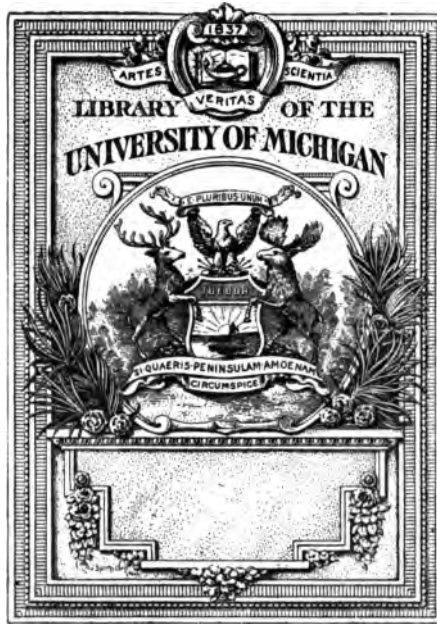
BRITISH MUSEUM (NATURAL HISTORY)

SECOND EDITION, REVISED

PRINTED BY ORDER OF THE TRUSTEES  
OF THE BRITISH MUSEUM

1908

[PRICE FOURPENCE]







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GUIDE  
TO  
SOWERBY'S MODELS  
OF  
BRITISH FUNGI  
IN THE

DEPARTMENT OF BOTANY

BRITISH MUSEUM (NATURAL HISTORY) *Dept  
bota*

BY  
WORTHINGTON GEORGE SMITH, F.L.S.



SECOND EDITION, REVISED

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## PREFACE

THE collection of models described in this Guide was made by James Sowerby in the course of the publication of his *English Fungi* (1797—1809). His purpose in their preparation was to exhibit to the public such a series of edible and poisonous species as would help to prevent the fatal mistakes so often made from eating poisonous fungi. His collection, consisting of more than two hundred models, was arranged in his house, and opened free to the public on two days each month.

After his death the models were acquired, in 1844, by the Museum from his son, James De Carle Sowerby.

The greater number were made of fragile unbaked pipe-clay. Many of the models were injured before they came into the possession of the Museum, and in the course of years the colouring had been greatly altered by light and dust. The injuries having been carefully repaired by a skilful formatore, Mr. Worthington G. Smith undertook to restore the natural colours and to remount the models. By his deft manipulation the models have become once more faithful representations of the living plants.

The illustrations of the Hymenomycetes in this Guide are from Stevenson's *British Fungi*, by the kindness of the publishers, Messrs. Blackwood and Sons, Edinburgh. The illustrations of the other groups were prepared by Mr. Smith for this publication.

WILLIAM CARRUTHERS.

### NOTE TO SECOND EDITION

The first edition was issued in 1893 and was reprinted without alteration in 1898. The present edition has been carefully revised with the assistance of the author, and a glossary has been added.

A. B. RENDLE.

DEPARTMENT OF BOTANY,  
BRITISH MUSEUM (NATURAL HISTORY).  
October, 1908.

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## DIAGNOSTIC CHARACTERS.

*The Fungi represented in the models are the larger forms. They belong to the several Families of which the diagnostic characters are given in the following key :*

CLASS I. BASIDIOMYCETES.—Spores borne on more or less club-shaped cells—basidia.

ORDER I. HYMENOMYCETES.—Spore-bearing surface or hymenium exposed during development

- Family I. *Agaricaceæ*.—Hymenium spread over the surface of lamellæ or gills.  
„ II. *Polyporaceæ*.—Hymenium lining the interior of tubes.  
„ III. *Hydnaceæ*.—Hymenium spread over spines.  
„ IV. *Thelephoraceæ*.—Hymenium smooth.  
„ V. *Clavariaceæ*.—Hymenium smooth and vertical.  
„ VI. *Tremellinaceæ*.—Hymenium covering entire surface. Gelatinous.

ORDER II. GASTEROMYCETES.—Spore-bearing surface or hymenium enclosed until maturity.

- Family VII. *Phalloidaceæ*.—Hymenium enclosed in a volva with a middle gelatinous layer ; at maturity the volva is ruptured and the hymenium exposed.  
„ VIII. *Lycoperdaceæ*.—Hymenium enclosed in a double dehiscent peridium ; spores borne on basidia whose supporting threads are mixed with barren threads, which form a capillitium.  
„ IX. *Sclerodermaceæ*.—Hymenium enclosed in a single dehiscent thick peridium opening at the apex irregularly ; capillitium absent or scanty.  
„ X. *Hymenogastraceæ*.—Hymenium enclosed in a single indehiscent peridium. Capillitium absent. Subterranean.

CLASS II. ASCOMYCETES.—Spores borne within more or less tubular sacs—asci.

- ORDER. I. DISCOMYCETES.—Spore-bearing surface more or less basin-shaped, exposed.  
„ II. PYrenomYCETES.—Spore-bearing surface flask-shaped, spores escaping through an ostiole.  
„ III. TUBERACEÆ.—Spore-bearing surface enclosed in an indehiscent peridium. Subterranean.

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MYCETOZOA (SLIME-FUNGI).—Consisting of masses of free moving protoplasm—plasmodia—ultimately forming sporangia enclosing large numbers of spores. These are not fungi, but form a distinct group of organisms on the border-land between plants and animals.

## BRITISH FUNGI.

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FUNGI are reproduced by microscopic cells named spores, which are the analogues of the seeds of flowering plants. The spores are white, yellow, pink, red, brown, purple, or black; blue and green are very uncommon colours. The spores of the fungi represented by the models are either borne naked on a special part of the surface of the fungus (*hymenium*), as in the *Agaricaceæ*, *Polyporaceæ*, etc.; naked within the substance of the fungus, as in the puff-balls, etc.; or in little transparent sacs (*asci*), as in the cup-fungi and some truffles. The delicate threads proceeding from the germinating spores form the *mycelium*, which is usually white, and is popularly termed "spawn." From this mycelium the perfect fungus arises, reproducing the parent form. As a rule, the spores of the larger fungi are very short-lived, some retaining their vitality for only a few hours; while the mycelium is usually long-lived, waiting suitable conditions for growth.

Some of the higher fungi grow rapidly, and are fully developed from the spore in a few days, such as some of those found on dung; while others take a much longer time. Some are very evanescent, living but a few hours; while others, which grow on trees, continue to increase in size for many years.

The season of growth is usually the autumn, but a considerable number appear in the spring and summer, and some continue to grow till late in the autumn or even early winter.

Most of the larger fungi are terrestrial and grow on or just under the surface of the ground; a large number grow on dead leaves and twigs; others on dead wood, bark, branches, and trunks. It is unusual to see fungi on healthy trees; the majority of the larger fungi so commonly seen growing on tree-trunks in parks, woods, and forests are "wound parasites," which germinate upon a damp injured place and grow parasitically upon the living host.

The species as a rule do not exhibit brilliant coloration, but there are remarkable exceptions, the most striking being scarlet and crimson, as in *Agaricus muscarius*. Yellow, orange, blue, purple, and white also occur, also rarely green and black, but the majority are pallid, watery-brown, brown, greyish, or buff. The brown and buff colours of Agarics often cause the fungi to be overlooked when growing amongst dead leaves.

## CLASS I. BASIDIOMYCETES.

## ORDER I. HYMENOMYCETES.

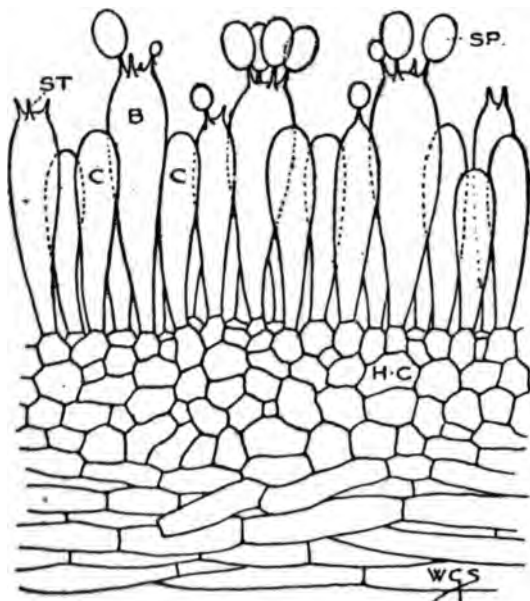


Fig. 1.—Section of a portion of the outer surface of the gill of a mushroom, *Agaricus campestris*, showing the surface cells at the upper part of the illustration bearing the reproductive bodies or spores. (Enlarged 1,000 diameters.)

Nearly three-fourths of the models belong to the *Hymenomyces*. In the first family (*Agaricaceæ*) the hymenium is spread over the surface of gills; when ripe, the spores fall from the hymenium as a fine powder.

A microscopic examination of a portion of the gill (Fig. 1) shows that the spores *SP* are borne on slender and delicate supports (*sterigmata*) *ST*. The cells at *H.C* are the ordinary cells of the mushroom; the larger ones at *B* are termed *basidia*.

Barren basidia are shown at *c.c.* In the *Hymenomyces* the spores, as a rule, are produced in fours, rarely in twos, or in groups of more than four.

## FAMILY I. AGARICACEÆ.

GENUS I. *AGARICUS* L.

The genus *Agaricus* is divided into five series by the colour of the spores:

- |                          |             |
|--------------------------|-------------|
| 1. White spores . . . .  | LEUCOSPORI. |
| 2. Pink spores . . . .   | HYPORHODII. |
| 3. Brown spores . . . .  | DERMINI.    |
| 4. Purple spores . . . . | PRATELLÆ.   |
| 5. Black spores . . . .  | COPRINARIÆ. |

These groups, except the last, are represented in the models. These series, however, somewhat overlap, and some species

exhibit relationships with other *Agaricaceæ* not belonging to the genus *Agaricus*.

The colour of the spores is frequently the same as that of the gills; but this agreement cannot be depended upon, as the colour of the gills often changes during growth. Thus the gills of the common mushroom are first white, then pink, next purple-brown, and ultimately black; while the spores are dark purple-brown. The colour of the spores can be easily observed by removing the stem of the fungus, and laying the cap, with the gills under, on a piece of paper or glass. In a few hours the fallen spores will form a coloured impression of the gills.

The colour of the spores having been determined, it is necessary to examine a section of the specimen, especially in relation to the attachment of the gills to the stem, and to observe the presence or absence of a ring (*annulus*) round the stem. The stem may be solid or hollow, and thickened upwards or downwards; it may be naked at the base, or spring from an enclosing wrapper (*volva*). The cap may be thick and fleshy, or thin and membranous; deeply depressed, or rounded and incurved. The gills may be thick or thin.

The material on which the fungus grows should be noted, whether on earth, on dung, or on dead or living plants; and the habitat must be observed, whether in woods, fields, roadsides, downs, etc. The odour and taste are also important.

The accompanying illustration (Fig. 2) shows the chief parts of an Agaric (*Agaricus phalloides*). A is the cap (*pileus*), from which depend at B B the gills (*lamellæ*); C is the stem (*stipes*), furnished with a ring (*annulus*) at D, and a basal sheath at E, being the lower part of the volva. In the early stage of this species the volva encloses the whole plant, and the warts G G on the pileus on the full-grown plant are remains of it. The annulus, D, similarly, is part of the general veil connecting the edge of the pileus with the stem, which was ruptured by the expansion of the pileus.

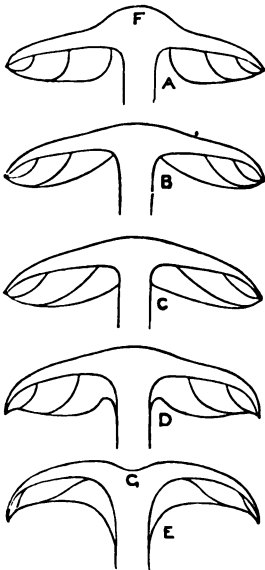


Fig. 3.—Sections of Agarics, showing attachment of gills.

The gills are *free*, as at A, Fig. 3; *adnexed* when they just

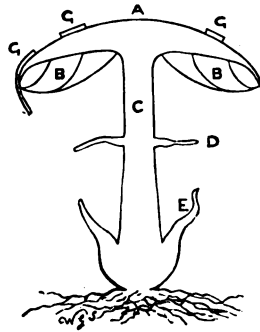


Fig. 2.—Section of *Agaricus phalloides* Fr. (One-third natural size.)

reach the stem, as at B; *adnate* at C; *sinate* when they have a short curve or *sinus* near the stem, as at D; and *decurrent* when they run down the stem, as at E. The pileus is *umbonate*, as at F, and *depressed* as at G.

#### SERIES I. LEUCOSPORI.

Spores white, rarely greyish, greenish, very pale lilac, or dingy. At present between four and five hundred British species of white-spored Agarics are known, of which forty-one are represented by models.

**SUBGENUS I. AMANITA.**—Distinguished by the usually warty pileus, white gills free from or just touching the bulbous stem, which springs from a volva. All the species are terrestrial, and grow in woods and uncultivated places. They may be most readily distinguished from the true mushrooms by their occurrence in woods and not in pastures, by their permanently white gills, and their white and not purple-brown spores. There are twenty-two British species, of which four are represented by models.

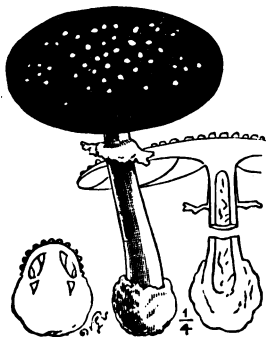


Fig. 4.—Type form of *Amanita phalloides* Fr.  
*Agaricus muscarius* L.  
(One-quarter natural size.)

1. **A. phalloides** Fr.—Pileus fleshy, shining white or pale yellow, slightly viscid in wet weather, generally naked, but sometimes sprinkled with a few fragments of the broken volva; gills free and shining-white; stem and ring white; volva commonly immersed in the soil, or buried among dead leaves and twigs.

It is an extremely common inhabitant of woods. It grows from April to November, and has—except when very young—a penetrating and offensive smell, and is highly poisonous. A case of poisoning is recorded in the *Lancet* for 1879 by Mr. C. B. Plowright. Two boys ate part of a raw specimen about 3 p.m., and no ill results followed until midnight, when one boy became sick and delirious. He died after two or three days, from the narcoto-irritant poison of the fungus. The same gentleman has recorded in the *Transactions of the British Mycological Society*, 1908, a case of six deaths in one family, following the consumption of this fungus as food.

2. **A. muscarius** L.—Pileus scarlet-crimson, viscid in wet weather, and spotted with white or buff warts; gills at maturity sometimes of a pale sulphur-yellow tint; stem bulbous, and furnished with a closely adpressed volva and broad ring. The flesh is sulphur-yellow under the membrane of the pileus. Varieties occur with a yellow, brown, or whitish viscid pileus.

It grows in woods, from July to November, generally near birch trees, sometimes among firs. The poisonous alkaloid *muscarine* is obtained from it, about 200 lb. of the fungus being required for the production of 1 oz. of muscarine. *Amanitine* is also yielded by this species. It is known to be poisonous, causing a form of intoxication, and sometimes delirium and death. The Rev. M. J. Berkeley has recorded a case of "deep intoxication" from eating it. In past times a decoction of this fungus was used for killing flies; whence its name, from *musca*, a fly. A preparation said to be a solvent for corns is made from it.

3. *A. pantherinus* DC.—Pileus olive-brown, viscid, and sprinkled with regularly arranged white warts; gills and flesh wholly and invariably white.

It grows in woods and pastures from July to October and resembles the two last species in being poisonous. It has sometimes been mistaken for the following species, *A. rubescens*, which is edible; a ready means of distinguishing them is to be found in the fact that, on being bruised or broken, *A. rubescens* always changes to a foxy-red colour, while *A. pantherinus* is permanently white.

4. *A. rubescens* Pers.—Pileus reddish-brown, sometimes pale or almost flesh-coloured, not viscid, more or less covered with mealy, pale buff or whitish warts; stem rufescent; volva almost obliterated.

This species is easily distinguished from its allies by the change in colour of its flesh already noted. The reddening, however, must be taken together with its other characters. Every Agaric which reddens on being cut or broken is not necessarily edible. Some are probably poisonous, such as *Lactarius fuliginosus*, or worthless, if not dangerous, as *Russula nigricans*. *A. rubescens* grows in great abundance in woods and parks from June to November, often embedded among dead leaves, and is specially common near beeches and firs. It is frequently attacked by larvæ. It is well known as an esculent in French markets, where it bears the name of *gommelle*.

SUBGENUS 2 AMANITOPSIS is not represented by a model.

SUBGENUS 3. LEPIOTA. — Distinguished by a usually floccose (not warty) pileus; gills generally free or remote from the stem; stem hollow as a rule, and furnished with an annulus or ring. Most of the species are terrestrial, but one often grows on sawdust, another on tan, and another about stumps. They are found in rich grassy fields more commonly than in woods.



Fig. 5.—Type form of *Lepiota*, *Agaricus procerus* Scop. (One-fifth natural size.)

Exotic forms frequently occur in greenhouses. Several species instantly change to blood-red, brown, or buff on being cut or broken; some have a bitter taste and a pungent and disgusting odour; others, however, are edible, and among the best of esculent fungi. There are forty-six British species, four of which are represented by models.

5. **A. procerus** Scop. (Parasol Mushroom).—Pileus when fully grown six or eight inches across, with a distinct central boss or umbo, the cuticle being broken up into broad, shaggy scales; gills free, or remote and white; stem long and hollow, bulbous, finely variegated with minute scales, and furnished with a large, movable ring. The flesh on being cut changes to a faint brown hue, more marked in the stem than in the pileus.

It grows from July to October in pastures, lowlands, and orchards, by grassy roadsides, and on heaths and commons among gorse and bracken, rarely in woods, and always prefers the neighbourhood of trees and bushes.

It is one of the most esteemed of edible fungi, many persons holding it, on account of its more delicate flavour, in higher estimation than the common mushroom; it is sold in the markets of France and Italy, and is said to have been sold in past times in Covent Garden market. A good ketchup can be made from it.

6. **A. meleagris** Sow.—Pileus fawn-coloured, with minute velvety warts; gills white, rarely lemon-coloured; stem minutely scaly, with an evanescent ring.

A rare species, probably exotic in origin. It grows from May to October on spent tan in hothouses, and changes colour to a beautiful red on being cut or broken.

7. **A. cepæstipes** Sow.—Pileus at first obtusely conical, clothed with separating plumose down; stem floccose, bulbous, with a fugacious annulus.

This species is also an inhabitant of gardens, greenhouses, and stoves, where it usually grows from March to September on tan and leaves in densely compacted companies. It is usually a bright sulphur-yellow in colour, but frequently white. It is of a soft leathery consistency, and somewhat dry.

8. **A. granulatus** Batsch.—Pileus and lower part of the stem covered with a dense granulate orange or brownish meal.

A pretty species, common in woods and open grassy places, lawns, etc., from July to November. Sometimes it is pure white.

SUBGENUS 4 HIATULA is unrepresented amongst the models.

SUBGENUS 5. *ARMILLARIA*.—Most of the species are terrestrial, and grow in woods or pastures; others grow on stumps or tree-trunks. The pileus is not warty, as in *Amanita*, or scaly, as in *Lepiota*, but often scurfy; the gills are variously attached to the

stem, which is normally furnished with an annulus ; sometimes the annulus is absent, and then *Armillaria* is apt to be confused with subgenus 6 (*Tricholoma*). Most of the species are rare. There are fourteen British species ; the models represent different forms of a common species, *Agaricus melleus*.

9. *A. melleus* Vahl.—Pileus livid, yellowish, tawny or sooty brown, often downy and scurfy, or beset with small blackish specks or scales ; gills usually adnate, but sometimes more or less decurrent, as shown in Fig. 6 ; flesh yellowish or brownish ; stem externally rigid, spongy within ; annulus usually large and sulphur-yellow, sometimes small, reduced to a few arachnoid threads, or absent.



Fig. 6.—Type form of *Armillaria*, *Agaricus melleus* Vahl. (One-third natural size.)

It usually grows from July to November in crowded clusters upon or near decaying stumps, or in woods, by roadsides, and in pastures near trees. It produces a vast number of white spores, which are often sufficiently abundant to whiten the stump on which it grows. Sometimes it grows from long black cords of compact mycelium termed *rhizomorpha*. These black flattened cords are frequently found beneath the bark of old trunks and stumps, but it does not follow that all such growths belong to *A. melleus*. This species is frequently found on living trees.

*A. melleus* is sold for food in Continental markets, but in Britain it is looked upon as a worthless species for the table owing to its strong, foxy odour and acrid disagreeable taste when uncooked. It has caused constriction of the throat when eaten raw.



Fig. 7.—Type form of *Tricholoma*, *Agaricus saponaceus* Fr. (One-third natural size.)

SUBGENUS 6. *TRICHOLOMA*.—All the species are truly terrestrial, and none are marked by a central depression of the pileus. The stem has neither volva nor ring ; the gills are never free from the stem, but are distinctly sinuate. None have been recorded as poisonous, although a few may be suspected, as *A. sulphureus*, which has an offensive odour, *A. saponaceus*, which smells of soap, and *A. sejunctus*, which has a bitter taste.

There are ninety-two British species, seven of which are represented by models.

Sometimes species placed under *Russula*, *Lactarius*, and *Hygro-*



*phorus* are confounded with *Tricholoma* ; but attention must be paid to the membranous sinuate gills of the latter, the rigid-fragile substance of *Russula*, the milky juice of *Lactarius*, and the waxy gills of *Hygrophorus*.

10. **A. sejunctus** Sow.—Pileus dull light yellow inclining to olive, streaked with brownish or dull purple fibrils, viscid in wet weather ; flesh fragile ; gills broad, somewhat distant, shining-white, not changing colour ; stem solid, smooth, shining-white.

A rare species, with an odour like rancid meal and a bitter taste. It usually grows in fir plantations from September to November.

11. **A. rutilans** Schæff.—Pileus dry, variegated with purple and ferruginous-brown down on a yellow ground ; flesh bright yellow ; gills crowded, golden yellow ; stem large, light yellow, variegated with purple.

One of the handsomest of British Agarics. It is found in pine woods, frequently on or near stumps from August to November. Inodorous. Suspected poisonous.

12. **A. terreus** Schæff.—Pileus downy and mouse-grey in colour, umbonate, inclining to split, and very brittle ; gills broad, sinuate, somewhat distant, white, then grey ; stem thick and solid. Inodorous, taste rancid.

This common species occurs from August to November in beech and mixed woods, and in hedges near beeches and firs, sometimes in large numbers. There is a shining-white variety.

13. **A. murinaceus** Bull.—Pileus dry, silky, scaly, mouse-coloured, and brittle ; gills broad, distant, and cinereous ; stem stuffed, twisted, and variegated with minute scales. The whole plant becomes cinereous. Odour strong, unpleasant, alkaline ; taste very disagreeable and bitter.

A rare inhabitant of open woods and pastures from August to November.

14. **A. sulphureus** Bull.—Pileus at first silky, then smooth and even ; gills adnexed, somewhat thick and distant ; stem often curved, striate and fibrous.

It is not uncommon from August to November in mixed woods, and is probably poisonous. It is easily known by the bright sulphur-yellow colour of all its parts, and its strong fetid odour of gas-tar water.

15. **A. gambosus** Fr. (St. George's Mushroom).—Pileus very fleshy, hemispherical or distinctly convex, with the margin incurved or inrolled ; gills crowded and sinuate ; stem thick, solid, firm and fleshy, not bulbous. The whole plant is usually biscuit-colour.

There need be no fear of mistaking this for any other species,

if its season of growth, April and May, and its habitat, upon downs and in pastures, are remembered in connection with its habit of growing in "fairy-rings," often of immense size, and its very simple structural characters, as seen in section. *A. gambosus* may often be seen growing in abundance on St. George's Day, April 23; it sometimes lingers on to July.

The odour is strong of fresh meal; generally pleasant, but sometimes rank and strong.

*A. gambosus* is edible, and is highly esteemed by some, and much eaten in France and Italy. It is too dry for the manufacture of ketchup, but may be further dried and kept suspended on strings for winter use. It should be gathered in dry weather; not after rain, when the plant is full of water.

16. *A. albellus* Fr.—Pileus of typical specimens conical, then convex, fleshy, white, becoming grey when dry; gills attenuate near the stem and not sinuate, crowded and white; stem thick, solid, somewhat bulbous. The odour is mild, and the taste, when raw, not unpleasant.

*A. albellus* is a close ally of *A. gambosus*; the model exhibits an abnormal form; typical examples resemble small specimens of *A. gambosus*, but *A. albellus* grows in woods from April to October, and is rare. Sometimes a large number of very small specimens grow together in one conjoined mass; but a typical specimen would be represented by a solitary plant with a pileus about three inches in diameter.

SUBGENUS 7. CLITOCYBE.—The pileus is usually fleshy, plane, depressed, or infundibuliform with an involute margin; the gills are generally and typically decurrent, sometimes adnate, never sinuate as in *Tricholoma*; the stem is fibrous externally, elastic, spongy-stuffed, often becoming hollow.

All the species are terrestrial, and many grow late in the autumn or even after frosts in winter; several species are fragrant, some powerfully so; a few are esculent. There are seventy-eight British species, ten of which are represented by models.

The species placed under *Clitocybe* must not be confounded with fungi which show a similar structural character in section, as *Paxillus*, where the spores are brownish-red; *Gomphidius*, where the spores are blackish; *Hygrophorus*, where the spores are white, but the whole substance is usually waxy-brittle or fatty; *Lactarius*, where the spores are white, but the flesh and gills are milky;



Fig. 8.—Type form of *Clitocybe*, *Agaricus nebularis* Batsch. (One-fifth natural size.)

*Cantharellus*, where the spores are white, but the gills are thick, swollen, and vein-like ; or *Lentinus*, where the spores are white, but the entire plant is leathery and not terrestrial.

17. **A. inornatus** Sow.—Pileus fleshy, livid, with a separable cuticle ; flesh grey or variegated grey ; gills at first adnate, then decurrent, crowded, grey ; stem thick, solid, grey. Odour mushroom-like.

A rare inhabitant of grassy places in woods in October and November.

18. **A. odoratus** Bull.—Pileus dull bluish-green in colour, fleshy, flattened or slightly umbonate, smooth and moist in wet weather ; flesh greyish-white ; gills adnate-decurrent, slightly distant, the same hue as the pileus, but generally somewhat duller and paler ; stem stuffed, flexuous, often short and slightly bulbous, at first floccoso-fibrillose, then smooth ; usually white villous at base.

Common in woods from August to November, and easily recognised by its colour and fragrance. The latter has been compared with melilot, anise, almonds, meadow-sweet, and new-mown hay. The odour betrays the presence of the fungus in woods ; it is retained for a long time in dried specimens. The species is edible, but should be used with caution ; it has a mushroom-like taste, with a suggestion of the odour of new-mown hay.

19. **A. dealbatus** Sow. (Ivory Caps).—Pileus shining-white like ivory and always dry, at first convex, then upturned, undulate and irregular ; flesh white and dry ; gills white, thin, crowded, adnate, scarcely decurrent ; the stem is dry, whitish, fibrous, at length hollow-stuffed.

Common in woods and pastures, and on downs, from July to November.

This species is esculent, its odour being pleasant, and the flavour when cooked agreeable. It, however (like the true mushroom and *Boletus edulis*), sometimes acts as a nerve irritant and causes profuse sweating or violent diarrhoea ; for such attacks Dr. H. G. Bull, of Hereford, recommended a glass of strong hot whiskey and water. It sometimes grows in profusion on mushroom beds ; it is remarkable that in this position it often grows in company with *A. Orcella*, a fungus from which it can be distinguished only after careful examination. *A. dealbatus* has white spores, *A. Orcella* pink spores ; both are esculent.

20. **A. elixus** Sow.—Pileus fleshy at the disc, thin near the margin, convex, often depressed but umbonate, margin at length undulate ; flesh dull grey-white ; gills white, thin, decurrent, distant, connected by veins ; stem solid, sooty-whitish, velvety at the apex.

Not uncommon in woods in October and November, where it sometimes grows in large numbers. It is distinguished from all its allies by its very bibulous brittle-soft flesh, which in wet weather

becomes completely saturated with moisture, and then often breaks with its own weight; the colour changes at the same time from pallid to sooty brown.

21. *A. opacus* With.—Pileus at first convex, then expanded, umbonate, repand; gills adnato-decurrent, very crowded, white; stem stuffed, subfibrillose, unequal, flexuous.

A wholly white species, common in woods in October and November, remarkable for the superficial silvery glair with which the pileus is clothed, and which may be rubbed off with a touch. Sometimes mistaken for *A. dealbatus*.

22. *A. maximus* Fr.—Pileus often a foot in diameter, infundibuliform but umbonate, whitish or pale buff, fleshy at the disc but thin towards the involute margin, dry; flesh white, soft; gills deeply decurrent, somewhat crowded, soft, whitish, not changeable; stem attenuate upwards, elastic, spongy-solid, whitish.

One of the largest of British Agarics, not uncommon in grassy places from July to November. Odour weak, but pleasant; possibly edible.

23. *A. geotropus* Bull.—Pileus pale tan-coloured, convex, then depressed, often umbonate, smooth, margin thin; flesh white; gills deeply decurrent, somewhat crowded, white; stem solid, fleshy, attenuate upwards, white, becoming yellowish.

Sometimes rivals *A. maximus* in size, but is firmer and usually smaller, more elegant and slender. It is one of the handsomest of all the British Agarics, and grows in woods and pastures, sometimes in fairy-rings of enormous size, from September to December. Odour of almonds.

24. *A. flaccidus* Sow.—Pileus shining, tawny-ferruginous, slightly fleshy, flaccid, at first umbilicate, then infundibuliform, never umbonate; flesh pallid, fragile when fresh, flaccid when dry; gills arcuate, decurrent, crowded, very narrow, whitish, becoming yellow, stem naked, shining, red-brown, elastic, tough, thickened and villous at the base.

Common in woods and bushy places, where it usually grows gregariously in rings from September to January. Taste insipid.

25. *A. cyathiformis* Fr.—Pileus deeply depressed, umber-black, hygrophanous, becoming somewhat paler when dry, its margin remaining for a long time involute; flesh almost as dark as the pileus; gills decurrent, cinereous-fuscous; stem attenuate upwards, fuscous, fibrillose and somewhat reticulate, a little paler in colour than the pileus.

Usually grows in woods, in fields, and on downs; it often appears in August, and may be commonly found after the frosts of winter in February. It is a beautiful and easily recognised but variable species, sometimes cinnamon-brown, clay, or flesh-colour, with whitish-brown

or grey gills ; the colours are usually very dark, especially in damp weather.

26. *A. laccatus* Scop.—Pileus varying from a quarter of an inch to four or five inches in diameter, the average size being about an inch, thin and scurfy, depressed, dry but very hygrophaneous ; gills adnate with a decurrent tooth, very broad, distant ; stem tough, fibrous, stuffed, equal, flexuous, twisted, same colour as pileus, white-villous at the base.

A very variable plant both in colour and stature. There are two colour varieties : the more common rufous-flesh-colour, carnation, or brick-red, becoming yellow-ochreous on the pileus when dry ; the less common, intense bright purple, becoming lavender on the pileus when dry, is usually known as *A. amethystinus* Bolt. ; it varies from lavender to blackish-purple.

*A. laccatus* in all its forms grows among dead leaves in woods from May to December, generally singly, but sometimes in small connate groups. Odour sometimes of garlic.

SUBGENUS 8. COLLYBIA.—The species usually grow on dead stumps, twigs, or leaves ; some root in the ground, and a few grow upon other fungi. The latter spring from *sclerotia*, little hard masses of compact mycelium, about the size of a grain of wheat ; these *sclerotia* are formed in the ground or in the substance of other fungi. Most of the species are small, firm, slow-growing, and persistent ; they continue in active growth till the winter has well advanced ; several have a disgusting odour. The margin of the pileus is at first involute ; the stem is hollow, with a distinct cartilaginous bark ; the gills are freely or obtusely adnexed. There are seventy British species, five of which are represented by models. The species of *Collybia* are frequently confounded with those of *Marasmius*, the leathery species of which revive with moisture after becoming dry. This is not the case in *Collybia*.



Fig. 9.—Type form of *Collybia*, *Agaricus fusipes* Bull. (One-quarter natural size.)

27. *A. radiatus* Relh.—Pileus brown, flattened, more or less umbonate, often irregular, glutinous, wrinkled, and seldom more than  $2\frac{1}{2}$  in. in diameter ; gills adnate-sinuate, broad, thick, distant, shining-white ; the stem is six inches or more long, pale brown, straight, rigid, generally twisted and attenuate upwards, the base continued in a tail-like manner, sometimes six inches long and tapering to a point, the whole of this growth being buried in the ground or in rotten wood. Odourless.

Extremely common from June to November, and generally grows in a solitary manner among grass on and near decaying stumps, in

woods and by hedgesides. There is a wholly shining-white form, and a common small form with a pileus one inch or less across. In the Botanical Department there is a drawing of a specimen of this species with a pileus  $8\frac{1}{2}$  in. in diameter and a stem (including the rooting base) 22 in. long.

The pileus is dry in its young state, glutinous (at the disc only) at maturity, and becomes dry again with age.

28. ***A. fusipes*** Bull.—Pileus fleshy, rufescent-brown, smooth, dry, umbonate, often cracked; gills adnexed, broad, distant, firm, white, then pale brown, often spotted with foxy-brown stains; stem rufous-brown, long, stuffed, cartilaginous externally, swollen in the middle, twisted, cracked, longitudinally striate and attenuate to a point at the rooting base.

Common from June to November on old stumps, where it usually grows in a densely cæspitose manner; it is very variable in size. It is generally considered esculent; the taste is not unpleasant, but the flesh is tough. Dr. Badham, in his *Esculent Funguses of England*, recommends this fungus for pickling.

29. ***A. maculatus*** A. & S.—Pileus fleshy, compact, convexo-plane, even, smooth, margin thin, at first involute; gills sinuate, almost free, very crowded, linear; stem hard, externally cartilaginous, somewhat ventricose, striate, base attenuate, rooting. Odour not unpleasant. Taste acid.

A typical example of a large *Collybia*, inhabiting woods, usually under beeches and firs, from May to November; it is at once known by its large size, and its creamy or pale buff colour, spotted and stained foxy-red; it sometimes becomes almost wholly rufescent.

30. ***A. velutipes*** Curt.—Pileus tawny-yellow, convex, then plane, moderately fleshy, smooth, viscid; flesh yellowish, watery and soft; gills slightly adnexed, almost free, somewhat distant, pallid yellow; stem tough, externally cartilaginous, covered with dense brown—sometimes almost black—velvety down.

It sometimes springs from a luxuriant golden byssoid mycelium formerly called *Ozoneum aureum* and *Byssus barbata*. The stem and mycelium are frequently luminous.

A very common late-growing species; it may be found throughout the entire winter from August to April in crowded clusters on trunks and stumps of all kinds in parks and gardens both in town and country; the stem is seldom so attenuate as shown in the model, being usually only one or two inches in length, and somewhat stout. Taste agreeable.

31. ***A. dryophilus*** Bull.—Pileus slightly fleshy, tough, convexo-plane, usually depressed in the centre, margin at first inflexed; flesh white; gills almost free, but slightly sinuate, crowded, narrow, white, sometimes becoming sulphur-yellow; stem cartilaginous, hollow, and

more or less inflated (sometimes decumbent), smooth, rooting, often becoming yellow.

Very common among leaves in woods, parks, gardens, and hedgesides, where it grows at all seasons except midwinter, in a solitary or gregarious manner; it is variable in colour, though usually some shade of livid brown or rufous. The taste when raw leaves a burning sensation and a sense of suffocation.

**SUBGENUS 9. MYCENA.**—Most of the species are small, some minute, all are beautiful. They usually grow upon stumps, often in clusters; the pilei are generally convex, the stems attenuate and fragile, and the gills non-decurrent. Most of the species are scentless, but some have a strong alkaline odour or an odour of radish. Three of the milky *Mycena* exude pale or blood-red juice, one saffron-crimson juice, one yellow, and two a white juice like milk.



Fig. 10.—Type form of *Mycena*,  
*Agaricus polygrammus* Bull.  
(One-quarter natural size.)

In *Mycena* the pileus is commonly campanulate and umbonate and never involute at the margin as in *Collybia*; some of the species are highly fragile and fugitive, others are firmer and more persistent. They all grow in autumn and early winter. There are eighty-five British species, four of which are represented by models.

32. ***A. purus* Pers.**—Pileus campanulate, then expanded, at length plane, umbonate, striate at margin, rose-colour, varying to purple, lilac, violet, bluish-grey, white, or yellowish, highly brittle and semi-transparent; gills adnate, broad, ventricose, connected by a network of veins, pallid or whitish; stem hollow, somewhat tough and rigid, smooth, the same colour as the pileus, and villosio-fibrillose at the base.

Extremely common in woods, hedgesides, and pastures from midsummer till early winter. It is a very variable but well-marked and easily recognised species. The taste and smell are strong, hot, disagreeable, and pungent of radish or cabbage-stalk.

33. ***A. polygrammus* Bull.**—Pileus conical, then campanulate, slightly umbonate, dry and smooth, striate, with the margin frequently toothed, fuscous-grey, livid, dull yellow, or rarely shining-white; gills broad in front, adnexed, almost free, distant, white, frequently marked with soxy-red spots and blotches; stem rigid, straight, equal, naked, hollow, longitudinally grooved, silvery grey varying to livid and azure blue, and of shining metallic appearance.

A comparatively large and extremely common fungus on stumps. It appears from September to January, and grows in clusters. Odourless or disagreeable.

34. *A. epipterygius* Scop.—Pileus campanulate, at length more expanded, never depressed, striate, covered with a very glutinous separable pellicle, commonly cinereous—varying rufescent or yellowish; gills sinuato-decurrent, cinereous, rufescent; stem tough, hollow, even, rooted and fibrillose at the base, glutinous, yellow varying to pallid-cinereous or whitish.

A common pretty fragile and glutinous species, inhabiting woods, where it grows from August to December on and among dead ferns, twigs, leaves, etc.; it is usually gregarious or cæspitose, but sometimes solitary. Odourless.

35. *A. corticola* Schum.—Pileus hemispherical and thin, deeply striate, and obsoletely umbilicate, smooth or pruinose, generally blackish, becoming bluish, fuscous, or ashy-grey; gills adnate, sinuate, broad, distant, paler than pileus; stem generally incurved, smooth or slightly furfuraceous, hollow, paler than the pileus.

Very small and common on the mossy trunks of trees, where it grows abundantly from midsummer to early winter; soon withering in dry weather, but reviving with moisture.

SUBGENUS 10. *OMPHALIA*.—All the species are small; the pileus is generally depressed, the gills decurrent. Some species of *Omphalia* grow on the ground, others in moist situations among or upon dead twigs, leaves, mosses, etc. They are most commonly met with in wet weather, and in hilly and woody places. No species is known to be edible. There are forty-six British species, two of which are represented by models.

36. *A. pyxidatus* Bull.—Pileus membranous, pellucid, umbilicate, then infundibuliform, radiato-striate, very hygrophanous, smooth and red-brown when moist, paler and slightly silky when dry; gills decurrent, somewhat distant, narrow, flesh-colour, then pale yellowish; stem tough, equal, smooth or pruinose, pallid or red-brown.

Frequent among grass in woods and pastures and on downs from July to November.

37. *A. muralis* Sow.—Pileus somewhat membranous, tough, convex, umbilicate, then infundibuliform, radiato-striate, margin crenulate, red-brown; gills decurrent, distant, pallid; stem short, stuffed, smooth, same colour as pileus.

On old damp mossy walls, turf-banks, and turf-walls—hence its specific name. It is more common on the ground among moss and short grass in open places in woods, and grows from January to November.



Fig. 11.—Type form of *Omphalia*, *Agaricus umbelliferus* L. (Natural size.)



**SUBGENUS 11. PLEUROTUS.**—Nearly all the species grow upon trunks or stumps, a small



Fig. 19.—Type form of *Pleurotus*, *Agaricus corticatus* Fr. (One-sixth natural size.)

number on the ground. The stem, when present, is usually lateral or excentric, but if the plants grow vertically they have frequently a central stem. The pilei are usually irregular. Most of the species appear in late autumn or early winter; *Agaricus ostreatus* and *A. euosmus* are sometimes seen in the spring. There are forty-four British species, four of which are represented by models.

**38. *A. ulmarius* Bull.**—Pileus fleshy, compact, horizontal, regular in form, but excentric, convex and smooth, livid-whitish or ochreous-white in colour; flesh white, tough; gills sinuate or rounded behind, somewhat crowded, whitish; stem thick, solid, firm, curved, excentric, white.

The odour is powerful, and somewhat rank and acid.

Uncommon in some districts, but frequent in the neighbourhood of London, where it grows from September to December, singly or gregariously, upon old unhealthy and damaged trees, hastening their decay. It is usually seen upon the elm, generally high up among the branches. Occasionally it grows upon other trees, as the beech, oak, poplar, and willow. It is a "wound-parasite," growing on accidental wounds on trees; the spores germinate on the wounded surface, and the mycelium penetrates the trunk and causes it to decay.

It is by some considered esculent, but the flesh is always tough and deficient in flavour.

**39. *A. subpalmatus* Fr.**—Pileus fleshy, convex, then flattened, clothed with a thick tough gelatinous corrugated pellicle; gills rounded behind, broad, crowded, paler than pileus; stem solid, fibrous, soft, at length hollow, curved, smooth, fibrilloso-striate.

The imbricated gelatinous pilei are usually fixed together with gluten.

A remarkable and beautiful species, said to be rare, but common in the neighbourhood of London. It usually grows in clusters on squared timber, and may frequently be seen in wood-yards, it is less common on tree-trunks and stumps; it generally appears late in the autumn or in early winter, sometimes it may be found in mid-winter. The whole plant is pale orange-buff, nankeen, or rufescent flesh-colour. It looks and cuts like raw veal. It has a bitter aromatic taste.

**40. *A. ostreatus* Jacq. (Oyster Fungus).**—Pileus fleshy, soft, somewhat dimidiate, smooth and moist, yellowish-brown, grey-brown, brown, or black-brown in colour; gills decurrent, anastomosing near

the stem, somewhat distant, broad, white, sometimes turning light yellow; stem short, firm, elastic, oblique, thickening upwards, white, hairy at base, sometimes obliterated.

A common species, growing in clusters on elm, poplar, willow, ash, apple, laburnum, and other trees; on rare occasions a single specimen may be met with as shown in the model, but it is usually caespitose and imbricated; it appears in autumn and early winter, sometimes midwinter or spring. Its specific name was suggested by the colour and shape of the pileus, like an oyster-shell.

The odour is strong and disagreeable.

It has long been considered esculent, but is not generally esteemed. An allied plant named *A. euosmus*, said to be dangerous, is often confounded with *A. ostreatus*.

Mr. Plowright has recorded in *Grevillea* (vol. v. p. 64) the occurrence of this species on dry cerebral matter in the skull of a stranded whale at King's Lynn.

41. *A. tremulus* Schæff.—Pileus brownish-grey, hygrophanous, slightly fleshy, dimidiate, reniform, depressed and smooth, but often villous behind; gills adnate or decurrent, linear, somewhat distant, grey; stem very short, but distinct, grey, terminating at the base in a woolly mass.

A small variable and rare species, growing on mosses, fungi, rotten wood, or on the ground, from August to December.

## SERIES II. HYPORHODII.

Spores salmon, yellowish-salmon, pale rose, rubiginous, brownish-pink, or nankeen. Sometimes Agarics with clay-coloured spores, belonging to Series III. *Dermini*, are confounded with the *Hyporhodii*. There are 109 British species of *Hyporhodii*, four of which are represented by models.

SUBGENUS 12. VOLVARIA.—In its early stage the entire fungus is enveloped in a wrapper or *veil*, as shown in the small section on the left side of the illustration. This veil, when ruptured, remains as a sheath or volva at the base of the mature fungus, as shown in the larger section. All the species of *Volvaria* are more deliquescent than Agarics in general. They grow in woods, gardens, by roadsides, and in hothouses. One remarkable species, *A. Loveianus*, grows parasitically upon the pileus of *A. nebularis*. None of the species are edible; the larger species are sometimes mistaken for mushrooms. One large species, *A. gloiocephalus*, has a very unpleasant odour and is said to be poisonous.



Fig. 13.—Type form of *Volvaria*, *Agaricus volvaceus* Bull. (One-fifth natural size.)

The species agree in structure with subgenus 2 *Amanitopsis*. There are nine British species, one of which is represented by a model.

42. *A. volvaceus* Bull.—Pileus campanulate, then expanded, obtuse, cinereous, streaked with adpressed black fibrils; gills free, flesh-colour; stem white, solid, and almost equal; volva large, lax.

A magnificent Agaric well represented in the model; it grows from July to January, usually by grassy roadsides, and is often a great nuisance in hothouses from its profuse growth and luxuriance upon spent tan. When growing in a hothouse the mycelium often reaches from the floor to the shelves by climbing the wall. As in the case of the mushroom, the mycelium sometimes pierces the mortar between the bricks and produces a second crop outside the building.

It is remarkable that Sowerby has modelled an example with an ample ring round the stem: *Volvaria* should have none. Sowerby's ringed example, if true to nature, would belong to *Metraria*, a subgenus unrepresented in Britain.

SUBGENUS 13 ANNULARIA is unrepresented by a model.

SUBGENUS 14. PLUTEUS.—*Pluteus* agrees in structure with subgenera 4 *Hiatula* and 23 *Pluteolus*; but the spores are rosy, not white or brown. All the species are beautiful; some are very large in size, others are most brilliant in colour. All have ringless stems and free gills, and grow on or near stumps, or on sticks or sawdust. None are edible; the odour of some is faint and unpleasant. There are fifteen British species, one of which is represented by a model.



Fig. 14.—Type form of *Pluteus*, *Agaricus cervinus* Schæff. (One-quarter natural size.)

43. *A. cervinus* Schæff.—Pileus fleshy, campanulate, then expanded, when young smooth and slightly viscid, at maturity dry, fibrillose and streaked, fuliginous, sometimes yellowish-brown; the flesh is white and firm; gills free, crowded, ventricose, white, then flesh-colour; stem solid, firm, equal, white, striate with black fibrils, sometimes excentric.

Grows from April to November singly on and near stumps, and on sawdust. A most variable species.

It has been mistaken and sold for the true mushroom, which has a ringed, not naked, stem, and grows in pastures, not on stumps and sawdust.

SUBGENUS 15 ENTOLOMA is unrepresented by a model.

SUBGENUS 16. *CLITOPILUS*.—All the species are terrestrial, and many are strong-smelling; the gills are usually decurrent, never sinuate, and the pileus is depressed at maturity. *Clitopilus* agrees in structure and habit with subgenus 7 *Clitocybe*, and partially with subgenus 27 *Flammula*; but the spores are rosy, not white or brown. There are twelve British species, one of which is represented by a model.

44. *A. prunulus* Scop.—Pileus fleshy, compact, convex, then flattened, and at length slightly depressed, pruinose, dry, never viscid, white, rarely pale cinereous; gills deeply decurrent, somewhat distant, white, then flesh-colour; stem solid, firm, naked, often striate, villous at base.

Grows from June to October in clusters or rings, on the borders of woods and in grassy, shady, but open places.

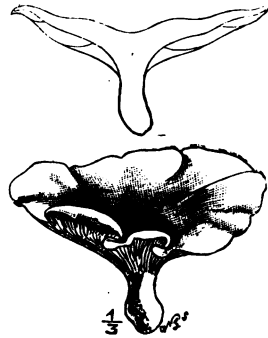


Fig. 15.—Type form of *Clitopilus*, *Agaricus prunulus* Scop. (One-third natural size.)

SUBGENUS 17. *LEPTONIA*.—*Leptonia* agrees in structure with subgenera 8 *Collybia*, 28 *Naucoria* and 37 *Psilocybe*; but the spores are rosy, not white, brown, or purple. The species are small, beautiful, brightly, sometimes brilliantly, coloured violet and blue; they grow in wet weather on downs and pastures, as well as in marshy places; all are inodorous except *A. incanus*, which has the odour of mice. There are fifteen British species, one of which is represented by a model.



Fig. 16.—Type form of *Leptonia*, *Agaricus lampropus* Fr. (One-half natural size.)

45. *A. chalybeus* Pers.—Pileus violaceous, steel-blue or blackish-blue, slightly fleshy, convex, somewhat umbonate, without striæ and squamulose; gills adnate, crowded, ventricose, light bluish-grey, with a paler edge; stem dark blue, not dotted, cartilaginous, stuffed, smooth.

Common in pastures from July to October.

The SUBGENERA 18 *NOLANEA*, 19 *ECCILIA* and 20 *CLAUDOPUS* are unrepresented by models.

### SERIES III. *DERMINI*.

Spores clay-colour, brown, yellowish-brown, orange-yellow, or ferruginous-brown.

The *Cortinari* are frequently mistaken for the larger *Dermini*;

but the former have bright-brown spores like iron-rust, an arachnoid veil, and a terrestrial habit. Many of the *Dermiini* grow on or about stumps, trunks, branches, chips, etc. There are 251 British species of *Dermiini*, twelve of which are represented by models.

The SUBGENERA 21 ACETABULARIA, 22 TOGARIA and 23 PLUTEOLUS are unrepresented by models.

SUBGENUS 24. PHOLIOTA.—Nearly all the species grow on stumps. *Pholiota* agrees in structure with subgenera 5 *Armillaria* and 35 *Stropharia*, but the spores are yellowish-brown, dark brown, or reddish, not white or purple. There are thirty-one British species, four of which are represented by models.



Fig. 17.—Type form of *Pholiota*,  
*Agaricus squarrosus* Müll.  
(One-quarter natural size.)

46. *A. aurivellus* Batsch. — Pileus brilliant yellow or reddish-yellow, ornamented with dark adpressed spot-like scales, fleshy, campanulate, then convex, gibbous, moist, margin floccose when young, flesh yellow at maturity; gills sinuato-adnexed, broad, crowded, at first whitish, then straw-colour, at length rusty-brown, never olivaceous-brown; stem curved, stuffed, subequal, at first clothed with adpressed, floccoso-fibrillose scales, at length almost naked, yellow at maturity; ring silky, membranous. Odour faint.

Grows from September to November on old stumps and trunks, in woods and hedgerows, either in overlapping clusters or singly. It is a beautiful but uncommon species.

47. *A. squarrosus* Müll.—Pileus dry, yellow-brown, shaggy with crowded, revolute, persistent brown scales, fleshy, umbonate or gibbous; flesh sulphury-yellow; gills adnate with a decurrent tooth, crowded, pallid olivaceous, then rusty; stem attenuate at the base, stuffed, shaggy from the base to the ring with crowded revolute darker scales; ring membranous, entire or laciniate, of the same colour as the scales.

Very common, growing from July to December in tufts on stumps and trunks, chiefly ash, from late summer to early winter. It is remarkable for its powerful and disagreeable odour, which is, however, sometimes absent. It is said that when cooked it is not poisonous.

There are two remarkable varieties of this fungus: one, *A. Mülleri* Fr., with a pallid pileus and entire ring, which grows on beeches, the other *A. verruculosus* Lasch, with a yellow scaly-papillose pileus, which grows on maple.

48. *A. spectabilis* Fr.—Pileus shining, golden or tawny, becoming paler, fleshy, compact, hemispherical, dry, torn into adpressed

pilose squamules, continued into the veil at margin; flesh hard, sulphur-yellow; gills adnate or adnato-sinuate, crowded, yellow, then rusty-brown; stem solid, hard, ventricose, attenuate, and rooting downwards, mealy above, smooth or squamulose below the spreading persistent ring. Taste when raw strong, disagreeable, bitter-aromatic.

Represented by two models; a very handsome bright golden-yellow species, which grows in clusters on oak stumps from August to December. It is often confounded with *A. aureus*, which, however, is always terrestrial.

49. *A. mutabilis* Schæff.—Pileus cinnamon when moist, paler when dry, hygrophanous, slightly fleshy, usually obtusely umbonate, smooth, but when young sometimes squamulose; gills adnato-decurrent, crowded, pallid, then cinnamon; stem rigid, stuffed, then hollow, equal or attenuate downwards, slightly shaggy as far as the ring, dark brown at the base; ring membranous, externally squamulose.

Very variable, but easily recognised in all its forms; it grows from April to December, in dense tufts on stumps in spring, summer, and autumn. It is said to be not poisonous, and has sometimes been eaten.

SUBGENUS 25. *INOCYBE*.—The pileus in all the species is adpressed silky-fibrillose; gills usually sinuate, but varying adnate and decurrent, never cinnamon-pulverulent. All are terrestrial, and mostly nauseous smelling; none are edible. There are sixty-one British species, of which two only are represented by models.

50. *A. scaber* Müll.—Pileus pale tan in colour, variegated with adpressed darker scales, conical, then convex; flesh firm, white, not reddish; gills slightly adnexed, thin, crowded, whitish, then dusky; stem solid, firm, equal, white, silky-fibrillose or velvety.

Common in woods from June to October. Almost scentless.

51. *A. rimosus* Bull.—Pileus satiny-brown, with the whitish flesh exposed in longitudinal cracks, umbonate; flesh white; gills free or slightly adnexed, somewhat ventricose, whitish, then fuscous and rusty-brown, edge serrulate, pallid; stem solid, firm, fibrous within, thickened and fibrillose at the base, mealy upwards, becoming yellowish or brownish, sometimes white; the thin veil fugacious. Odour earthy.

This species is common from June to October in woods and open ground, where it grows subgregariously; it is readily distinguished by its longitudinally fissured pileus.



Fig. 18.—Type form of *Inocybe*, *Agaricus lanuginosus* Bull. (One-quarter natural size.)

SUBGENUS 26. *HEBELOMA*.—*Hebeloma* agrees with subgenera 6 *Tricholoma*, 15 *Entoloma* and 26 *Hypholoma*, but the spores are

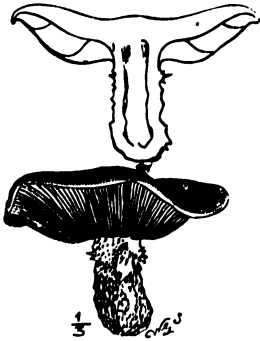


Fig. 19.—Type form of *Hebeloma*, *Agaricus fastibilis* Fr. (One-third natural size.)

clay-colour, not white, rosy, or purple. The pileus is smooth and damp to somewhat viscid, with the edge at first incurved; the gills are sinuato-adnate; stem fleshy, fibrous, mealy at apex, sometimes showing slight traces of a veil or ring.

All the species are terrestrial, strong-smelling, and known or suspected to be poisonous. There are twenty-six British species, two of which are represented by models.

52. *A. fastibilis* Fr.—Pileus pale yellowish or pale tan, compactly fleshy, convexo-plane, inclined to be repand, moist, clammy, smooth, the involute

margin pubescent; gills sinuate, somewhat distant, rather broad, at first whitish, then dull clay-colour, edge whitish, distilling drops in wet weather; stem solid, fleshy-fibrous, stout, white-silky and fibrillose, white, varying pallid, often with traces of an incomplete ring, rarely with a perfect ring.

Grows in a somewhat caespitose manner in woods and woody places, and by grassy roadsides near bushes and trees from July to October. Odour and taste of radish, but bitterish, heavy, and disgusting, like fetid flax; poisonous.

An examination of the model will show that the poisonous *A. fastibilis* bears a considerable external resemblance to small specimens of the "horse-mushroom" (57, *A. arvensis*). The habitat of *A. fastibilis* is the same as that of *A. arvensis*, and these species are often confounded. *A. fastibilis* is sometimes exposed for sale in our markets as the true mushroom; it may make its appearance on mushroom beds and oust the mushroom. In distinguishing these two species attention must be paid to the odour; in one the scent is pleasant, in the other disgusting. *A. campestris*, the true mushroom, grows in open pastures, and has an ample ring, and pink, at length purple-black, free gills; *A. fastibilis* never has its gills pink or purple-black or free. In *A. arvensis* and the cultivated variety named *A. hortensis* the gills are at first somewhat clay-colour or brown rather than pink, but they are never sinuate, and no mushroom has a clammy pileus.

Compare the illustrations of *A. fastibilis* with 57 and 58 (*A. campestris*).

53. *A. crustuliniformis* Bull.—Pileus whitish-tan in colour, darker at the disc, fleshy, gibbous or convexo-plane with an obtuse umbo, smooth, at first slightly viscid, not zoned; flesh hyaline when moist; gills rounded-adnexed, crowded, whitish, then clay-colour, at

length brown, distilling drops in wet weather; stem stuffed, then hollow, stout, somewhat bulbous, white, naked, white-squamulose at apex; veil and ring absent. Odour strong, like prussic acid or radish, but fetid and disgusting; very poisonous.

Common from August to November in mixed woods, where it frequently grows in rings of immense size; it is often confounded with *A. fastibilis*, and as frequently mistaken for *A. arvensis*. It differs from the latter in its odour, in the attachment of the gills to the stem, in the absence of a ring, and in its habitat; the superficial resemblance between the two plants is, however, strong. As both fungi are very variable, no single character should be held conclusive; all the distinctive characters should be taken together.

SUBGENUS 27 FLAMMULA is unrepresented by a model.

SUBGENUS 28. NAUCORIA.—*Naucoria* agrees in structure with subgenera 8 *Collybia*, 17 *Leptonia* and 27 *Psilocybe*, but the spores are ferruginous, not white, rosy, or purple. The species, however, differ much among themselves in details of structure and habit; they are generally small, and are either terrestrial or grow on stumps, twigs, sawdust, decaying leaves, grass, etc. No species of *Naucoria* is edible. There are forty-four British species, one of which is represented by a model.

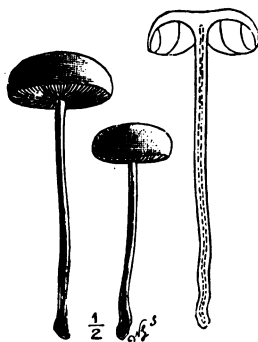


Fig. 20.—Type form of *Naucoria*. *Agaricus semiorbicularis* Bull. (One-half natural size.)

54. *A. horizontalis* Bull.—Pileus slightly fleshy, convexo-plane, obtuse, even; gills rounded-free, broad, plane; stem solid, very short, incurved, naked.

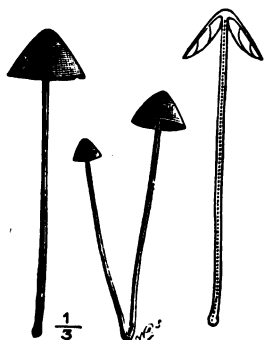


Fig. 21.—Type form of *Galera*. *Agaricus tener* Schæff. (One-third natural size.)

A small and somewhat rare species found upon elm trunks, branches, logs, and felled trees in the winter; the whole plant is pale cinnamon in colour.

SUBGENUS 29. GALERA. — *Galera* agrees in structure with subgenera 9 *Mycena*, 18 *Nolanea* and 28 *Psathyra*, but the spores are ochreous-ferruginous, not white, rosy, or purple. All the species are small in size and autumnal. There are seventeen British species of *Galera*, one of which is represented by a model.

55. *A. tener* Schæff.—Pileus smooth, truly conical, rich ochreous-buff when damp, pale ochreous when



dry; gills adnate, crowded, cinnamon; stem long, hollow, fragile, straight, shining-buff.

Very common from April to December in pastures and gardens, in grassy places in woods, and by grassy roadsides; variable in size, pileus from  $\frac{1}{2}$  in. to  $1\frac{1}{4}$  in. in diameter.

SUBGENUS 30 TUBARIA is not represented by a model.

SUBGENUS 31. CREPIDOTUS.—*Crepidotus* agrees in structure with subgenera 11 *Pleurotus* and 20 *Claudopus*, but the spores are ferruginous, not white or rosy. Most of the species are small, and grow on decaying stumps and branches; a few grow on decaying leaves, moss, and grass; they appear late in the autumn. There are fifteen British species, one of which is represented by a model.

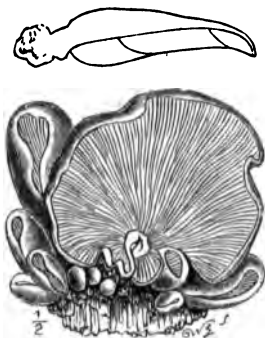


Fig. 22.—Type form of *Crepidotus*, *Agaricus mollis* Schæff. (One-half natural size.)

56. *A. mollis* Schæff.—Pileus gelatinous-fleshy, obovate or reniform, undulate and lobed, smooth, pallid buff or livid brown; usually stemless, but sometimes with a small, almost obsolete, strigose stem; flesh soft, watery, whitish; gills crowded, whitish-grey, then pale cinnamon.

In imbricated specimens the lower pilei are generally much stained by the ferruginous spores from the gills of those above.

Not uncommon from May to December on old stumps and logs; sometimes it grows luxuriantly on sawdust (like *Paxillus panuoides*), usually in clusters; sometimes it appears in midwinter.

#### SERIES IV. PRATELLÆ.

Spores typically dark purple, sometimes pale purple, frequently brownish-purple, in some instances almost brown. The species with brownish-purple and brownish spores are often confused with the *Dermini*. Some *Pratellæ* produce few spores, and the gills remain white. There are 114 British species, eight of which are represented by models.

SUBGENUS 32 CHITONIA is unrepresented by a model.

SUBGENUS 33. PSALLIOTA.—*Psalliota* agrees in structure and habit with subgenera 3 *Lepiota* and 23 *Togaria*, but the spores are dark purple shaded with brown, not white, the gills are free, and the stem



Fig. 23.—Type form of *Psalliota*, *Agaricus campestris* L. (One-third natural size.)

is furnished with a ring. They begin to appear at the end of summer, and several of the larger species are well-known esculents. There are eleven British species with many varieties; two species are represented by models.

57. *A. arvensis* Schæff. (Horse-Mushroom).—Pileus from three to twelve or more inches across, whitish or whitish-buff in colour, very fleshy, globoso-campanulate, then flattened, flocculoso-mealy when young, then slightly silky or squamulose, dry; flesh thick, compact, white, generally changing to yellowish, when cut or broken dull brownish-yellow or brownish-buff; gills free, ventricose, broader in front, white, clay-colour, then reddish-fuscous, at length purple-black, often moist but never deliquescent; stem three or four inches long and an inch or more thick, smooth, white, often swollen, hollow, with a lax floccose pith, obsoletely marginato-bulbous when young, ring large, spreading, or pendulous, appears double with the upper portion membranous, the lower thicker, more or less free at the circumference, and radiately split.

*A. arvensis* may be only a coarse variety of the true mushroom, *A. campestris*. It grows in manured places, often among rank grass, by grassy roadsides, and in orchards, pastures, and on downs from spring to December; it especially affects the neighbourhood of trees, hedges, bushes, and bracken. It often grows in rings of enormous size.

There are two well-marked varieties of the horse-mushroom; one, *A. villaticus* Brond., is large and very scaly; another, var. *purpurascens* Cooke, growing in woods, has the pileus at length tinged with purple.

Esculent; when fresh and young this species is juicy and delicious, but it becomes tough and dry with age. It makes a good ketchup. Most of the market mushrooms from fields belong to this species.

*A. arvensis* requires to be carefully distinguished from the poisonous *A. fastibilis* and *A. crustuliniformis*, already described. Sometimes *A. radicosus*, notwithstanding its odour of prussic acid, is mistaken for this mushroom.

The frequent newspaper records of "gigantic mushrooms" generally refer to *A. villaticus*. In the *Transactions of the Woolhope Club*, 1874-6, p. 60, an account is given of three enormous mushrooms which lifted a flagstone weighing 80 lb. in the town of Worcester. A mushroom is mentioned in the *Gardeners' Chronicle* for July 28, 1888, which measured 4 ft. in circumference and weighed 2 lb. 14 oz.

58. *A. campestris* L. (Mushroom).—Pileus varying from white to rufescent-brownish, fleshy, convex, then flattened, dry, generally silky, sometimes squamulose; flesh thick and soft, becoming reddish or slightly fuscous on being cut or broken; gills free, ventricose, crowded, often becoming subdeliquescent, salmon-white,

soon changing to bright flesh-colour, rose-salmon, or pink, then dark purplish-brown, never clay-colour or brown; stem stuffed, firm, when young somewhat short and enlarged below, then equal, even or squamulose, white; ring spreading or reflexed, torn, sometimes deciduous.

This species, which grows in open pastures and on breezy downs from May to December, seldom near trees or bushes, is not usually more than three to five inches in diameter. It is, however, very variable both in stature and colour.

Mushrooms appear under many striking varietal forms. The best marked of these are—*A. silvicola* Vitt., grows in woods; pileus smooth, shining, white; stalk elongated, somewhat bulbous: *A. pratensis* Vitt., grows in pastures, often near trees and bushes; pileus scaly-rufous; flesh changing to pink on being cut or broken: *A. vaporarius* Otto, pileus and stem furnished with a brown pilose coat: *A. costatus* Fr., grows in woods; pileus sulcate, repand: *A. rufescens* Berk., grows in pastures, rufous; gills at first white; flesh changing to bright pink, sometimes blood-red on being cut or broken: *A. exannulatus* Cooke, ring evanescent or obsolete: *A. albosquamosus* W. G. Sm., pileus large, fleshy, furnished with large adnate white scales, the remains of a very thin volva; flesh dry, tough, changing to rose, yellow sienna, and brown on being cut or broken; gills crowded, changing to black, edge at first white; stem tough, with a distinct pith, with slight remains of volva at base; spores few, pale in colour. *A. hortensis* Cooke (*A. cryptarum* Letell.), the cultivated form of mushroom beds: itself very variable; pileus fibrillose or squamulose, brownish. One of the forms of *A. hortensis*, named var. *Buchananii* Berk., has the pileus white, opaque, nearly smooth, depressed; another, var. *elongatus* Berk., with stem tall, and base somewhat bulbous, approaches *A. silvicola*. These forms occur on mushroom beds.

Abnormal growths of mushrooms are very common, such as stemless forms, and one or more mushrooms growing inverted on the pileus of another.

Mushrooms are highly nitrogenous plants. According to Prof. Church the constituents are:—

	In 100 parts.	In 1 lb. oz. grs.
Water . . . . .	90.0 .	14 175
Albuminoids, etc. . . . .	5.0 .	0 350
Carbohydrates, etc. . . . .	3.8 .	0 266
Fat . . . . .	0.7 .	0 49
Mineral matter . . . . .	0.5 .	0 35

The same authority says that, though mushrooms contain, when dried, about half their weight of nitrogenous matter, the nature and feeding value of this matter has not been ascertained.

In the first attempts to raise mushrooms artificially, young living mushrooms were transformed from pastures to gardens and manure heaps; and by taking full-grown mushrooms, breaking them

up, steeping the fragments in water, and applying the infusion to a bed thought to be suitable. Mushrooms were first grown from spawn in the seventeenth century; at that time gardeners and nurserymen sought in pastures for the supposed true spawn. The first successful attempts at mushroom growing from such spawn were made by introducing it into melon and cucumber beds at the time the melon seeds were sown. At the present day "virgin spawn" is obtained from old rich pastures where horses and oxen have been feeding. This spawn is made up with partially dried cakes of compacted horse and cow dung and earth. If the cakes are too wet or too dry, the spawn will not "run"; it runs best and with greatest vigour in a moist heat of from 70° to 75° Fahr. Coco-fibre waste is a good ingredient in mushroom beds; the spawn freely runs in it. In the prepared cakes the spawn, if good, will generally live in a resting state for five years. It has been known to live for twenty years. Sawdust should never be used in the composition of mushroom beds, as other fungi grow freely on it. In France it is usual to apply nitre or saltpetre to mushroom beds, for the purpose of increasing the size of the mushrooms. In 1879 M. Charollois exhibited at the Central Horticultural Society of Paris a basket of mushrooms produced from spawn by sowing the spores on a plate of glass kept constantly moist and sprinkled with dung; the spawn thus produced was transferred to a mushroom bed. Mushrooms grown on strong manure are often offensive and uneatable.

Numerous fungi appear on mushroom beds, sometimes to the exclusion of the mushroom itself. The spores of good and worthless species alike are carried by the air, and, alighting by accident on prepared manure, find it a suitable habitat for germination and growth. In this way *Xylaria pedunculata* sometimes invades and destroys mushroom beds. Its growth in the mycelium condition within the beds resembles very thick black string, and this has sometimes been so abundant that many barrow-loads have had to be removed. If this be placed upon or buried in garden beds, it will often grow freely, and injure or even kill garden plants.

Like other plants, mushrooms are subject to disease, and diseased mushrooms are quite as likely to prove poisonous as diseased meat. Many microscopic moulds attack mushrooms, and no mushroom in a mouldy condition is fit for food. Mushrooms are frequently attacked by a disease in which the gills become very much thickened or totally obliterated; this is brought about by the attack of a parasitic fungus, *Mycogone alba* Letell. (lately renamed *M. perniciosa* Magnus), a stage in the development of a species of *Hypomyces* (see model of *H. lateritius*). Mushrooms are frequently sold in the markets in this condition; the mycelium thoroughly permeates the whole plant, and no doubt such mushrooms are dangerous if used as food.

Even perfectly sound mushrooms sometimes produce unpleasant symptoms. In the *Gardeners' Chronicle* for November 5, 1881, the Rev. M. J. Berkeley records several cases of diarrhoea, one of great severity, from eating mushrooms. He says: "My remark in this

and other cases of supposed poisoning with undoubtedly good mushrooms, is simply that the persons who gather them return hungry and fatigued, the mushrooms are badly cooked and hastily swallowed, so that they are irritating, tough, indigestible masses in the intestines. When properly masticated they are, on the contrary, perfectly wholesome." Cases of diarrhoea are not uncommon, and have been noticed with regard to *Boletus edulis* and other edible species.

An excellent ketchup is made from *A. campestris*, but very few mushrooms are apparently used in the "mushroom ketchup" of commerce. Home-made ketchup is seen under the microscope to be full of mushroom spores, but an examination of the mushroom ketchup of commerce discloses as a rule very few spores, in some none at all, and in others the spores of worthless *Coprini*.

SUBGENUS 34 PILOSACE is unrepresented by a model.

SUBGENUS 35. STROPHARIA.—*Stropharia* agrees in structure with subgenera 5 *Armillaria* and 24 *Pholiota*, but the spores are purple, not white or brown. In *Stropharia* the gills are adnate and the veil annular. The species grow on the ground, dung, or stumps; none are edible. There are twenty British species, two of which are illustrated by models.



Fig. 24.—Type form of *Stropharia*,  
*Agaricus æruginosus* Curt.  
(One-third natural size.)

59. *A. æruginosus* Curt.—Pileus glutinous, bluish-verdigris in colour, and flecked with white superficial scales, the colour being in the tinted slimy pellicle, which is soon washed off in wet weather, leaving the pileus plane and dull yellowish; gills adnate, not crowded, whitish, then fuscous, becoming purple-brown; stem hollow, equal, at first scaly or fibrillose below the ring, viscid, blue-green; ring distant.

*A. æruginosus* grows in dungy places in woods, fields, and by roadsides, often appearing in very wet weather late in the autumn or in the early winter. Poisonous.

60. *A. semiglobatus* Batsch.—Pileus hemispherical, never expanded, slightly fleshy, even, viscid, dull light yellow; gills adnate, very broad, dull purple-brown, clouded with black; stem hollow, straight, equal, smooth, yellowish, generally stained with the blackish-purple spores, glutinous; ring incomplete, distant, viscid.

Extremely common on horse-dung from early spring to early winter. Said to be poisonous.

SUBGENUS 36. *HYPHOLOMA*.—*Hypholoma* agrees in structure with subgenera 6 *Tricholoma*, 15 *Entoloma* and 26 *Hebeloma*, but the spores are purple-black, not white, rosy, or brown. With one or two exceptions, all the species grow on stumps in clusters; the ring is represented by a circle of fine dark-coloured hairs or fibrils on the stem, and similar fibrils belonging to the veil adhere to the margin of the pileus; the gills are adnate or sinuate. None of the species is edible; many are bitter-nauseous in taste. There are twenty-three British species, three of which are represented by models.



Fig. 25.—Type form of *Hypholoma*, *Agaricus fascicularis* Huds. (One-quarter natural size.)

61. *A. sublateritius* Schæff.—Pileus yellow, with a reddish disc, dry and smooth; flesh white, becoming yellowish; gills at first faintly olivaceous-yellow, then dull olivaceous-purple; stem pale yellowish, rusty-brown at the base, curved, attenuate downwards, furnished with a purplish-black fibrillose ring.

Generally grows in a cæspitose manner, and is common on old stumps from April to December, often confounded with other species of similar colour, especially with the common *A. fascicularis*. The taste is strong, nauseous bitter, and this distinguishes it from some, but not all, of its allies. Probably dangerous.

62. *A. fascicularis* Huds.—Pileus light yellow, with a reddish-brown disc, convex, then flattened, smooth, dry, the lower pilei of the crowded overlapping clusters generally stained with the purplish spores shed from the pilei above; flesh light yellow; gills adnate, very crowded, sulphur-yellow, then sulphur-green, at length purplish-green; stem hollow, thin, flexuous, fibrillose, yellow.

Extremely common, appearing from early spring to winter, on or about stumps. Odour and taste bitter-nauseous, sickening. Poisonous.

Specimens were exhibited at the Woolhope Club, Hereford, in 1872, with stems 4 ft. long.

63. *A. lacrymabundus* Fr.—Pileus whitish when young, then brown, becoming pale round the margin, convex, obtuse, irregular by the pressure of adjoining pilei, downy-scaly; flesh white; gills adnate, crowded, whitish, then brown-purple, edge whitish, distilling tear-like drops in wet weather; stem hollow, somewhat thickened at the base, fibrillose-scaly, brownish-white; cortina fibrillose, appendiculate, white.

Common from April to December, growing in clusters on the ground or on and about stumps in woods and fields. It is some-

times sold for the pasture mushroom, and often used as an ingredient for ketchup.

**SUBGENUS 37. PSILOCYBE.**—*Psilocybe* agrees in structure with subgenera 8 *Collybia*, 17 *Leptonia* and 28 *Naucoria*, but the spores are purplish-black, not white, rosy, or brown. Nearly all the species are terrestrial; some grow in clusters, all are scentless, and none are edible. There are twenty-eight British species, one of which is represented by a model.



Fig. 26.—Type form of *Psilocybe*, *Agaricus spadiceus* Fr. (One-third natural size.)

64. **A. semilanceatus** Fr. — Pileus acutely conical, resembling a miniature broad spear-head in section, never expanded, with the slightly striate margin at first bent inwards, viscid, and dull yellowish-brown in colour; gills ascending to the summit of the acute cone, adnexed, linear, crowded, becoming purple-black; stem long, thin, tough, hollow, with a pith, flexuous, smooth, cortinate when young.

Common from August to November in dungy places among grass in pastures and by roadsides; it generally grows in numbers. Dr. Henry Wharton, in the *Transactions of the Essex Field Club* (vol. iv. p. 56), says this fungus has often been fatal to children.

**SUBGENUS 38 PSATHYRA**, with Series V. **COPRINARI** and its three **SUBGENERA 39 ANELLARIA**, 40 **PANÆOLUS** and 41 **PSATHYRELIA** are unrepresented by models.

## GENUS II. **COPRINUS** Pers.

The species do not wither or become putrescent, as in *Agaricus*, but dissolve into an inky fluid. All are fugacious; some are extremely rapid in growth. They grow in rich and highly manured places, often on dung, some on rotten wood; several grow close to or inside human habitations, either on the earth outside or on the walls and ceilings inside.

*Coprinus domesticus* is common on moist cloths and matting of all sorts, and is found in yards, kitchens, and sculleries, in cupboards and upon dishcloths. There are fifty-one British species, six of which are represented by models.

65. **C. comatus** Pers.—Pileus fleshy, at first cylindrical and white, the cuticle breaking up into adpressed fleecy white scales; gills free, white, then flesh-colour, at length purple and black, deliquescent; stem hollow, shining-whitish; ring torn, movable, at length vanishing.

A large handsome and common fungus in parks, gardens, farmyards, orchards, and in waste and grassy places, generally near human habitations. It grows in scattered groups from early spring to late autumn; sometimes it appears in the winter. When the gills are just becoming tinged with pink or purple *C. comatus* is esculent and delicious; it is, however, somewhat mucilaginous, and not pleasing to all tastes. It is sometimes candied with sugar.

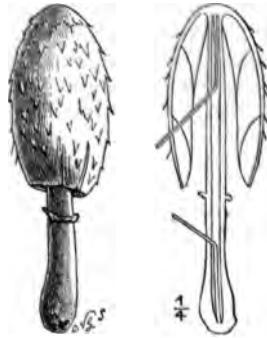


Fig. 27.—*Coprinus comatus* Pers.  
(One-quarter natural size.)

66. *C. atramentarius* Fr.—Pileus ovate, ashy grey-brown in colour, slightly fleshy, somewhat silky or slightly squamulose, longitudinally sulcate or ribbed, often deformed or unequally flattened; gills free, ventricose, white, then dark purplish-brown, at length black, deliquescent; stem furrowed, white, at first short, then elongated, with a slight fugitive ring at the place where the edge of the pileus was adpressed to the stem.

A large and common fungus, usually growing in great clusters, often on or near rotten stumps or palings in gardens, parks, orchards, or roadsides, and generally near human habitations; sometimes it appears to be truly terrestrial. It grows from early spring to winter. Edible, preferred by some to *C. comatus*. *C. comatus* and *C. atramentarius* are much used in the manufacture of inferior ketchup. Both species are sometimes termed “ink fungi,” from the quantity of ink-like fluid into which they dissolve when over-ripe; as this fluid contains an immense number of spores of definite size, it has been suggested that important documents might be signed with it as a precaution against forgery.

Growths of *C. atramentarius* sometimes dislodge the pavement in towns.

The mycelium from which *C. atramentarius* springs usually produces two crops every year, one in the spring, the other in the autumn. If ripe specimens are gathered in spring and buried near decaying posts or railings, the spores will in most cases produce a crop in the following autumn.

67. *C. picaceus* Fr.—Pileus black, conical, white-patched; gills free, ventricose, dead ashy-black, and deliquescent; stem tall, hollow, fragile, ringless, and white.

Sometimes termed the “magpie mushroom.” Rare from September to December by grassy roadsides and in open grassy places in woods. Sometimes this plant is sterile and white, and the gills dissolve into a milk-white fluid. Considered poisonous and has an unpleasant odour.



68. *C. niveus* Fr.—Pileus snow-white and mealy-floccose or squamulose, at first ovate, then expanded, at length revolute and torn; gills adnexed, narrow, becoming black and deliquescent; stem at first short, but soon elongated, fragile, covered with snow-white down.

Extremely common on horse-dung from early summer to early winter; it varies in size. It is frequent on mushroom beds, and sometimes so abundant that it prevents the growth of the mushroom.

69. *C. micaceus* Fr.—Pileus somewhat membranous, at first dull yellow-ferruginous, then brown-fuscous, undulate, irregular, lobed, striate, longitudinally split, and covered with minute shining glistening particles; gills adnexed, black-brown, deliquescent; stem hollow and soft, even, silky, white, then fibrillose.



Fig. 28.—*Coprinus micaceus* Fr.  
(One-third natural size.)

Common, and generally grows from June to November in clusters near stumps and at the base of old rails and fences. Sometimes it appears to be terrestrial.

70. *C. plicatilis* Fr.—Pileus grey-fuscous, with a darker fuscous disc, at first ovoid, but soon expanded, at length depressed and beautifully radiato-furrowed; gills free, blackish-grey; stem thin, hollow, equal, smooth, pallid-pellucid.

Common in fields and by grassy roadsides in damp, warm, and foggy weather from April to October. It grows in spring and summer when the weather is wet, cloudy, and warm; it is very short-lived, and is usually seen in perfection in the morning; after an hour or two it collapses and vanishes.

### GENUS III. BOLBITIUS Fr.

The species do not deliquesce, as in *Coprinus*, but merely become moist or mucid and putrefy; the spores also differ in being ferruginous, and not black. The species, owing to their yellowish-ferruginous colours, are sometimes taken for *Cortinarii*, but they never have an arachnoid veil and commonly grow on dung or dungy places like *Coprinus*. There are ten British species, one of which is represented by a model.

71. *B. fragilis* Fr.—Pileus light yellow, membranous, conical, then expanded, slightly umbonate, striate at margin, viscid; gills adnexed, yellow, then pale cinnamon; stem hollow, naked, smooth, yellow.

Common on dung from April to November.



Fig. 29.—*Bolbitius fragilis* Fr.  
(One-half natural size.)

## GENUS IV. CORTINARIUS Fr.

The genus *Cortinarius* is distinguished from other genera of the *Agaricaceæ* by an arachnoid veil (*cortina*), by dry, persistent gills which usually change colour to cinnamon, and by ferruginous spores. The species appear of various colours at different periods of growth and according as they are wet or dry; all are terrestrial and autumnal. They are frequently confounded with species of *Pholiota* and *Hebeloma*, but these do not possess an arachnoid cortina.

*C. violaceus* Fr. is looked upon as esculent. The Rev. M. J. Berkeley has recorded an undoubted case of poisoning by *C. bolaris* Fr.: the results were alarming, but not fatal; the symptoms were great oppression of the chest and profuse perspiration. Two days after eating the fungus the salivary glands remained enlarged and tender. There are 196 British species, eleven of which are represented by models.

The genus is divided into subgenera.

**SUBGENUS I. PHLEGMACIUM.**—Veil partial; pileus fleshy, viscid; stem firm, dry. There are forty-eight British species, three of which are represented by models.

72. *C. varius* Fr.—Pileus fleshy, bright ferruginous-tawny or yellow-tawny, very obtuse, slightly viscid, smooth, parts of the cortina attached to the margin; flesh white; gills sinuate, thin, somewhat crowded, violaceous-purplish or dark blue, then ochraceous-cinnamon; stem short, bulbous, compact, shining-white, adpressedly flocculose, superior veil pendulous.

A rare inhabitant of woods from September to November.

73. *C. glaucopus* Fr.—Pileus dingy-tawny or clay-colour, very fleshy, at length flattened and unequal, slightly viscid, floccoso-scaly, rarely even, often marked with a raised brown zone near the margin; flesh compact, white or yellowish; gills rounded, emarginate, crowded, bluish-grey, then cinnamon; stem solid, very stout, at first short and bulbous, at length elongated and bulb disappearing, woolly (chiefly at apex), pallid azure blue, internally paler, yellow at base.

A large species frequent in pine and beech woods, where it commonly grows in troops from August to October.

74. *C. purpurascens* Fr.—Pileus brown, olivaceous-brown, or tawny-olivaceous, spotted and often depressed round margin, which is sometimes marked with a raised brown zone, fleshy, glutinous; flesh azure-blue; gills sinuate, crowded, pallid grey-blue, then



Fig. 30.—Type form of *Phlegmacium*, *Cortinarius fulgens* Fr. (One-third natural size.)

cinnamon, violet-purple when bruised; stem solid, thick, bulbous, fibrillose, pallid azure-blue, becoming darker when touched.

Common in woods, sometimes cæspitose, from September to November.



Fig. 31.—Type form of *Myxarium*, *Cortinarius collinitus* Fr. (One-fifth natural size.)

SUBGENUS 2. MYXACIUM.—The pileus and stem are glutinous, and the gills adnate or decurrent. There are thirteen British species, one of which is represented by a model.

75. *C. collinitus* Fr.—Pileus fleshy, convex, then expanded, orange-tawny, glutinous; gills adnate, somewhat crowded, whitish blue-grey or clay-colour, then cinnamon; stem solid, for the most part floccose and glutinous near the top; in young specimens showing a glutinous, fugacious ring; colour blue-grey or

white, sometimes yellowish. Common in woods from July to November.

SUBGENUS 3. INOLOMA.—The pileus is fleshy, dry, at first silky, not hygrophanous; stem somewhat bulbous, with a single veil. There are twenty-three British species, two of which are represented by models.

76. *C. violaceus* Fr.—Pileus dark purple, fleshy, convex, villous-scaly, margin at first involute; flesh soft, purple; gills distant, adnate, broad, intense violet-purple, then cinnamon; stem bulbous, thick, spongy-solid, stout, tomentose, then fibrillose, dark purple; cortina woolly, azure-blue, stained with the ferruginous spores.

A handsome species, common in woods and open ground from August to November. Inodorous, but with a mushroom taste; esculent. Care must be taken not to confuse this with other purplish species, several of which are either suspected or known to be poisonous; attention must be paid to the dry, downy pileus, the bright-purple flesh as seen when cut or broken, and especially the cinnamon colour of the spores. *C. violaceus* is frequently confounded with *Agaricus personatus* Fr. and *A. nudus* Bull., purple species with white spores.



Fig. 32.—Type form of *Inoloma*, *Cortinarius callistus* Fr. (One-quarter natural size.)

77. *C. sublanatus* Fr.—Pileus fawn-colour, at length ferruginous, slightly fleshy, umbonate, clothed with innate floccose fuscous squamule; flesh whitish; gills adnate, olivaceous-yellowish, then

cinnamon ; stem solid, conico-elongate, clothed to the middle with fuscous down, which is continued into a fibrillose cortina, apex slightly violaceous, naked.

A rare inhabitant of woods in October.

**SUBGENUS 4. DERMOCYBE.**—The pileus is at first silky, then smooth, somewhat thin, not hygrophanous ; stem equal or attenuate downwards ; veil single, fibrillose ; flesh white or coloured. There are twenty-eight British species, two of which are represented by models.

**78. *C. spilomeus* Fr.**—Pileus reddish-brown or clay-colour, smooth ; gills adnate or ; sinuate, crowded, bluish-grey or violaceous, then cinnamon ; stem hollow, equal, white-lilac, variegated with rufous or tawny scales, furnished with a white cortina.

A pretty but uncommon inhabitant of woods in October ; it sometimes grows in clusters.

**79. *C. cinnamomeus* Fr.**—Pileus thin, umbonate, silky or downy-fibrillose, then smooth, cinnamon ; flesh yellowish ; gills adnate, crowded, shining, light- or golden-yellow, saffron-tawny or red-cinnamon ; stem stuffed, then hollow, thin, equal, yellowish and fibrillose, with the yellowish cortina.

A most variable species as regards the colour of the gills ; in the variety *sanguineus* they are blood-red. Common in mixed woods from August to February.



Fig. 34.—Type form of *Telamonia*, *Cortinarius armillatus* Fr. (One-fifth natural size.)

**80. *C. bulbosus* Fr.**—Pileus brown when moist, red-brown when dry, campanulato-expanded, margin torn, fibrillose ; flesh brownish when moist, whitish when dry ; gills adnate, somewhat distant, brown-cinnamon, never violet ; stem solid, bulbous, paler than pileus, yellowish at base, with a white fugacious ring.

A rare inhabitant of woods in September and October.

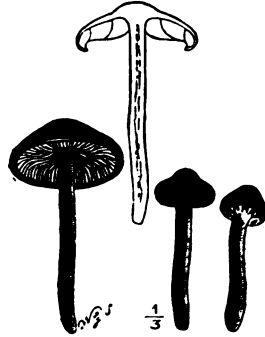


Fig. 33.—Type form of *Dermocybe*, *Cortinarius cinnamomeus* Fr. (One-third natural size.)

**SUBGENUS 5. TELAMONIA.**—The pileus is moist and hygrophanous, at first smooth or sprinkled with a few whitish fibrils, the remains of the veil ; stem annulate, or peronate with scales. There are forty-four British species, three of which are represented by models.

81. *C. evernius* Fr.—Pileus purple-brown, brick-red when dry, hoary-grey when old, very hygrophanous, then fragile, conico-campanulate, then flattened and obsoletely umbonate, when young slightly silky with white fibrils, at length rimosely incised and torn into fibrils; flesh same colour; gills adnate, ventricose, broad, distant, violaceous-purple, then paler, at length cinnamon; stem stuffed, soft, equal, slightly striate, violaceous, becoming pale, obsoletely zoned with the veil.

Frequent in woods from September to December.

82. *C. gentilis* Fr.—Pileus tawny-cinnamon, yellow when dry, very hygrophanous, varying to silky, conico-expanded, acutely umbonate, rimosely incised; flesh thin, same colour; gills adnate, thick, distant, tawny-cinnamon; stem stuffed, then hollow, equal, fibrillose, same colour as pileus when moist, furnished with one or more generally oblique zones, sometimes floccose below the ring, yellow.

A small species common in woods, chiefly of pine, where it grows in a gregarious manner from August to October.

SUBGENUS 6 HYDROCYBE is not represented by a model.

#### GENUS V. GOMPHIDIUS Fr.

The gills are mucilaginous, decurrent, distant, and soft, and the spores purplish-black; the veil is viscid-floccose. The species are terrestrial and chiefly found in pine woods. There are four British species, two of which are represented by models.

83. *G. glutinosus* Fr.—Pileus fuscous-purple, often mottled with black, fleshy, convex, then plane or slightly depressed, smooth, very glutinous; gills deeply decurrent, distant, branched, mucilaginous, whitish, then cinereous; stem solid, whitish, slightly thickened and yellow at base, viscid with the veil, fibrillose or furnished with black scales; cortina forming a fugacious ring.

Frequent in pine woods from summer to early winter. A beautiful variety of this plant, generally small, has a bright rose-coloured pileus and white stem, rosy at the base.

Possibly edible, but taste watery-mouldy.

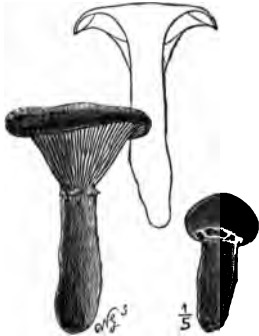


Fig. 35.—*Gomphidius viscidus* Fr. (One-fifth natural size.)

84. *G. viscidus* Fr.—Pileus rich red-brown, at first campanulate, then expanded and umbonate, slightly viscid, shining when dry; flesh bright yellowish; gills deeply decurrent, distant, somewhat olive, at length fuscous-purple; stem solid, nearly equal, yellowish, rhubarb-colour within, scaly-fibrillose, not very viscid; cortina forming a floccose fugitive ring.

A large and extremely handsome fungus, common in woods, chiefly of pine, from late summer to late autumn. Odour not unpleasant. The Rev. Wm. Houghton says that *G. glutinosus* and *G. viscidus* are quite wholesome.

#### GENUS VI. PAXILLUS Fr.

The gills are membranaceous, somewhat branched, and anastomosing; spores ferruginous or dingy white; the pileus is at first involute. Some species are terrestrial; others grow on stumps, sawdust, etc. There are sixteen British species, one of which is represented by a model.

85. *P. involutus* Fr.—Pileus deep dull ochraceo-ferruginous, darker in wet than dry weather, at first downy, then smooth, convexo-plane, then depressed, somewhat viscid when moist, shining when dry, villous at the very involute margin; flesh compact, pallid, mottled; gills dull yellow, decurrent, branched, anastomosing and forming pores near the stem, becoming brownish when touched: sometimes the gills are entirely replaced by pores, and then it resembles *Boletus*; stem fleshy, firm, solid, thickened upwards, naked, dingy yellowish, spotted.

A very common and somewhat large inhabitant of woods and open places near woods, from summer to early winter. Said to be edible, and highly esteemed in Russia; it is eaten in Belgium. It was tried by the Woolhope Club at Hereford, in 1870, but was not much approved.

Sometimes a brilliant yellow parasitic mould, *Hypomyces chrysospermus*, grows upon the gills.



Fig. 36.—*Paxillus involutus* Fr.  
(One-quarter natural size.)

#### GENUS VII. HYGROPHORUS Fr.

The pileus is viscid or watery; the gills are not truly membranous, but thick and of a waxy consistency, with a sharp edge; the spores are white. All the species are terrestrial; most are fragrant or pleasantly scented, but *H. foetens* Phill. has a disgusting nauseous odour. There are sixty-one British species, nine of which are represented by models.

86. *H. eburneus* Fr.—Pileus convexo-plane, margin at first involute and pubescent, even, very glutinous in rainy weather; gills decurrent, distant, veined; stem stuffed, then hollow, glutinous, apex granular,

A somewhat frequent inhabitant of woods, pastures, and grassy roadsides from August to October. The whole fungus is shining-white. Said to be edible; odour weak, not unpleasant.

87. *H. cossus* Fr.—Pileus glutinous, somewhat ochraceous, margin never pubescent; stem granular at apex, tinted faintly ochraceous.

Frequent in woody places from September to November. It greatly resembles *H. eburneus* in appearance but is easily distinguished by a very powerful odour, like that of the goat-moth.

88. *H. hypothejus* Fr.—Pileus at first olivaceous, glutinous, cinereous, pale and yellowish, orange, or rarely rufescent, fleshy, convex, then depressed, somewhat streaked; flesh thin, white, becoming light yellow; gills decurrent, distant, pallid-whitish, soon yellow or flesh-colour; stem stuffed, equal, even, viscid, rarely spotted with the veil, at length hollow; the fugitive partial veil is at first floccose, cortinate, and annular.

Frequent in pine woods in autumn and early winter; it varies much in size and colour.

89. *H. pratensis* Fr.—Pileus very fleshy at the disc, thin at the margin, convex, then flattened, smooth, moist in rainy weather, often cracked in dry weather; flesh firm, white; gills at first arcuate, then decurrent, distant, thick, firm, brittle, connected by veins; stem spongy-stuffed, attenuate downwards, smooth, naked.

Common in pastures and on downs from autumn to early winter. It is wholly light yellow-tawny and almost top-shaped.

Edible, but without much flavour.



Fig. 37.—*Hygrophorus pratensis* Fr. (One-third natural size.)

90. *H. virgineus* Fr.—Pileus fleshy, margin involute when young, convex, then plane, at length depressed, often floccose and widely fissured and cracked when dry; gills decurrent, distant, rather thick; stem short, stuffed, firm, attenuate at base, becoming even and naked.

A small inhabitant of pastures and downs, growing in scattered groups from August to December. The whole plant is white, hygrophanous, and brittle.

Edible; taste like the "Fairy-ring Champignon."

91. *H. ceraceus* Fr.—Pileus convexo-plane, slightly pellucid, striate, and viscid; gills adnato-decurrent, almost triangular; stem hollow, unequal, flexuous, compressed, and smooth.

A small and fragile species common in pastures and woods and

on downs, where it grows in troops from September to December. The whole plant is unchangeable waxy-yellow.

92. *H. puniceus* Fr.—Pileus viscid, deep shining blood-red, becoming variegated whitish-crimson in dry weather, slightly fleshy, at first campanulate, then becoming flattened, irregular, and lobed; flesh blood-red, waxy; gills ascending, ventricose, adnexed, almost free, thick, distant, whitish-yellow or yellow-reddish near the stem; stem solid, stout, then hollow, ventricose, striate, squamulose at the apex, same colour as the pileus or variegated with yellow, white at the base.

The largest and handsomest of the *Hygrophori*. It is frequent in pastures and on downs from June to November.

93. *H. conicus* Fr.—Pileus varying in colour from scarlet, through ochre, to whitish-sulphur, greenish, and livid, sometimes conical, acute, somewhat membranous, smooth, commonly lobed, then expanded and cracked, viscid when moist, shining when dry; flesh watery; gills attenuato-free, ventricose, thin, somewhat crowded, white, sulphur-yellow, sometimes reddish near stem; stem hollow, cylindrical, straight, fibroso-striate, extremely fragile.

Very common in pastures and on downs from July to November, and changing to black on being touched or broken. It commonly becomes jet-black soon after maturity, though occasionally, in dry weather, individuals do not change colour, but remain yellow or scarlet.

94. *H. psittacinus* Fr.—Pileus bright yellow, variegated with a bright-green glutinous substance, campanulate, then expanded, smooth, umbonate, very glutinous, becoming paler in colour and less viscid with age; gills adnate, ventricose, rather thick, broad, somewhat distant, generally green; stem hollow, equal, a little tough, wholly greenish, or green at apex.

Sometimes termed the “paroquet mushroom”; frequent in pastures and on downs from August to December. It is easily recognised by its peculiar though variable colours.

#### GENUS VIII. *LACTARIUS* Fr.

The species are easily recognised by every part of the fungus exuding white or coloured milk on being bruised or broken. Nearly all are terrestrial. The pileus is firm and fleshy, at length depressed, often zoned; gills membranous-waxy, slightly rigid, adnato-decurrent, often branched. A few of the species are esculent; the majority are acrid and poisonous, some



Fig. 38.—*Lactarius subdulcis* Fr.  
(One-third natural size.)



extremely so. There are sixty-three British species, nine of which are represented by models.

95. *L. torminosus* Fr.—Pileus pallid flesh-colour, varying ochraceous and white, somewhat zoned, with a shaggy fibrillose, buffish or whitish, at first involute margin, somewhat fleshy and fragile, depressed, viscid when moist; flesh pallid; gills very thin, crowded, paler than pileus; milk copious, white, unchangeable; stem stuffed, then hollow, delicately downy, then smooth, dry.

Very common in woods from August to November. The whole plant is highly acrid and poisonous, but inodorous.

*Hypomyces torminosus*, a parasitic white mould, changing to yellow and dark brown, is frequent on the gills.

96. *L. blennius* Fr.—Pileus pallid olivaceous or grey, fleshy, plano-depressed, glutinous, often concentrically spotted or irregularly zoned, margin incurved and downy in the young plant; flesh rigid, white; gills adnato-decurrent, thin, crowded, white, becoming cinereous when bruised; milk-white, unchangeable; stem thick, stuffed, then hollow, almost equal, even, viscid, pallid-grey.

Common in woods from July to early winter. Acrid, poisonous.

97. *L. pyrogalus* Fr.—Pileus cinereous-grey or grey-yellowish, firm, convex, then plane, at length depressed, smooth, moist in wet weather but not viscid, dry in dry weather, somewhat zoned; flesh white; gills adnato-decurrent, thin, somewhat distant, light yellow or ochraceous; milk abundant, white, unchangeable; stem stuffed, then hollow, often attenuate downwards, smooth, pallid-white or dingy.

Common in woods and pastures. Acrid, poisonous.

98. *L. piperatus* Fr.—Pileus white, fleshy, rigid-brittle, margin at first involute, umbilicate, at length infundibuliform, smooth, zoneless; flesh white, slightly changing to brownish on being broken; gills decurrent, crowded, narrow, at first arcuate, at length extended upwards, white, sometimes slightly yellow-spotted; milk abundant, white, unchangeable; stem solid, stout, often attenuate downwards, white, obsoletely pruinose.

A large species, common in woods from July to October. Very acrid, poisonous when raw; inodorous; sometimes placed among esculents, since the heat of cooking is said to dissipate the poison, as in many other acrid fungi. The use of so hard and acrid a plant for food is undesirable.

99. *L. vellereus* Fr.—Pileus white or pallid-tan, depressed, zoneless, margin inflexed, slightly pubescent; flesh white, changing to dull yellowish on being broken, but becoming white again; gills arcuate, adnato-decurrent, thickish, somewhat distant, rather broad, pallid, watery-white; milk white, scanty; stem solid, stout, equal, thinly downy.

Common in woods from August to December, not generally so large as the last, but more rigid and with less milk. Bitter-acrid, poisonous.

100. **L. deliciosus** Fr.—Pileus dull orange, dull yellowish, or reddish-orange, becoming paler with age, depressed in the centre, at length infundibuliform, margin naked, involute, smooth, slightly viscid, usually zoned with darker lines or irregular spots; flesh soft, not compact, pallid-ochreous, in parts bright orange; gills somewhat decurrent, crowded, narrow, arcuate, saffron-yellow, becoming paler, always turning green when bruised; milk bright orange, changing to green, aromatic; stem stuffed, then hollow, becoming fragile, usually attenuate downwards, the same colour as the pileus or paler, usually orange-spotted.

Locally frequent, sometimes abundant, in woods of scotch fir or larch from July to November. It often attains a large size, and may be immediately known from all other fungi by its change from orange to green on being bruised. Esculent when young and fresh; sold in Italian markets. The best method of cooking is, after cleaning, to boil in milk, slightly fry in butter, and serve in hot milk. When it is attacked by the reddish parasitic fungus *Hypomyces lateritius* it should not be eaten. (See no. 202.)

101. **L. rufus** Fr.—Pileus dark brown or cinnamon-rufous, umbonate, then depressed, at length infundibuliform, but always umbonate, zoneless, dry, at first silky-floccose, but soon becoming smooth and shining, margin involute when young and somewhat whitish-tomentose; flesh pallid-brown, not firm; gills adnato-decurrent, crowded, ochraceous or brownish-ochre; milk-white, not changing; stem stuffed, somewhat fragile, equal, rufescent, slightly downy and white, pubescent at the base.

Common in mixed woods from June to November, possibly more abundant in fir plantations. Taste bitter-acrid, scentless. Poisonous.

102. **L. fuliginosus** Fr.—Pileus fleshy, becoming plane, then depressed, spongy-firm, margin at first inflexed, sometimes uneven, flexuous, zoneless, very dry and somewhat downy or velvety, at length naked; gills rounded-adfixed, then decurrent, somewhat thin and distant, whitish, then rich yellow-ochraceous; milk white, usually changing to rose, and then saffron-yellow; stem spongy-stuffed, almost equal, ranging in colour from white, through buff and tan, to dull red or smoky.

Common in woods from August to October and easily known by the "coffee-and-milk" colour of the pileus, and the rapid change of the hard whitish flesh when broken to a reddish saffron-colour. Acrid-nauseous; taste sometimes mild, and not unpleasant; odour nauseous and pungent; probably poisonous.

103. **L. volemus** Fr.—Pileus zoneless, plano-convex, at length depressed, margin at first bent inwards, even, dry; gills adnato-

decurrent, thin, crowded, whitish or yellowish, brownish when bruised; milk abundant, white, sweet, sometimes becoming yellowish; stem stout, firm, solid, almost equal, golden or golden red-brown like the pileus.

Grows in woods from August to October; it is usually large in size and locally frequent, but generally uncommon; it is very easily recognised by its rigid flesh and beautiful rich rufous and golden hues, like those seen on some ripe and richly coloured pears. Esulent, considered delicious, pleasant-tasted even when uncooked.

#### GENUS IX. **RUSSULA** Fr.

The pileus is fleshy, at length depressed; stem shining; gills rigid, fragile, sharp-edged. All the species are terrestrial, and allied to *Lactarius*, but never milky; some are extremely variable in colour, and consequently difficult to name without experience. Many of the species are acrid and poisonous; a few are mild and edible; but, owing to the variations in colour, mistakes are common with beginners. There are sixty-seven British species, five of which are represented by models.

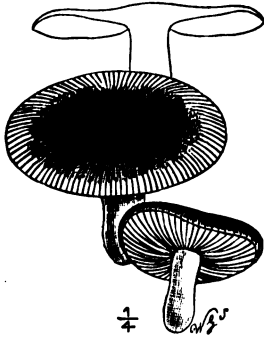


Fig. 39.—*Russula aurata* Fr.  
(One-quarter natural size.)

104. **R. adusta** Fr.—Pileus whitish-pallid, generally clouded with dark smoky stains as if scorched, fleshy, compact, depressed, at length somewhat infundibuliform, margin at first inflexed, smooth, without striæ, flesh not changing; gills adnate, then decurrent, thin, crowded, white, then dingy, constant in colour; stem solid, stout, same colour as pileus.

In woods from August to October; it is local, frequent in some localities, rare in others.

105. **R. sanguinea** Fr.—Pileus shining blood-red, often paler round the even acute margin, fleshy, firm, obtuse, at length depressed and infundibuliform, gibbous at the disc, moist in damp weather; flesh firm, white; gills at first adnate, then decurrent, crowded, narrow, connected by veins, fragile, somewhat forked, shining-white; stem stout, spongy-stuffed, at first contracted at the apex, then equal, slightly striate, white or shaded with red.

One of a considerable number of the genus with crimson pilei, some edible, others poisonous. It is a somewhat uncommon inhabitant of woods, chiefly fir, in August and September. Acrid, poisonous.

106. **R. foetens** Fr.—Pileus yellowish-brown, with a deeply striate, or ribbed, at length tuberculate margin, at first spherical, then ex-

panded and depressed, rigid, viscid in wet weather ; gills adnexed, crowded, connected by veins, at first exuding watery drops, whitish or pale yellowish, dingy when bruised ; stem thick, stout, stuffed, then hollow, whitish or whitish-grey.

A large, coarse species, common in woods from July to October, and easily recognised by its strong, penetrating, burning-fetid odour, strongest in mature specimens in damp weather, and weakest in dry specimens in sunny weather. Acrid, probably poisonous.

107. *R. emetica* Fr.—Pileus at first shining rosy, then shining blood-red, becoming lighter again when old, sometimes becoming white, yellowish, or buff—the crimson pellicle is separable, and the surface of the white flesh beneath is red—at first campanulate, then flattened or depressed, margin sulcate and tuberculate ; gills somewhat free, broad, rather distant, shining-white ; stem spongy-stuffed, stout, elastic, even, white or clouded with rose-colour.

The whole plant is very brittle at maturity, and often mistaken for the smaller acrid *R. fragilis*, in which, however, the gills are crowded. Found in woods and open places from July to December. Very acrid and poisonous ; said to act as an emetic.

108. *R. integra* Fr.—Pileus typically red, sometimes ranging in colour from red, through olivaceous, to brown, campanulato-convex, then expanded and depressed, pellicle viscid, at length tuberculato-sulcate at the margin, and brittle ; flesh white, yellowish towards apex ; gills somewhat free, broad, equal, or bifid near the stem, somewhat distant, connected by veins, at first pallid-white, then powdered with ochraceous spores, rarely sterile and white ; stem clavate or ventricose, stout, spongy-stuffed, even, shining-white.

A very common and variable inhabitant of woods, chiefly pine, from June to November. Generally mild in taste, sometimes astringent.

#### GENUS X. CANTHARELLUS Juss.

The gills are thick, somewhat branched, obtuse at the edge, and fleshy-waxy ; the spores are white ; there is no annulus or veil. Most of the species are terrestrial ; a few grow on mosses, and one or two grow on charcoal heaps or rotten wood. There are twenty British species, two of which are represented by models.

109. *C. cibarius* Fr. (Chantarelle).—Pileus fleshy, firm, smooth, convex, then plane or slightly depressed, at length repand ; gills decurrent, very shallow and thick, distant ; stem solid, thickened upwards,



Fig. 40.—*Cantharellus cibarius* Fr. (One-third natural size.)

Frequent in woods, especially beech, where it grows in clusters, large rings, or scattered groups from July to December. It is easily recognised by its colour, which is orange-yellow in every part, within and without, and its pleasant odour, which has been compared with that of apricots or ripe greengages; the odour is, however, sometimes a little earthy and heavy. Esculent, and highly esteemed as a delicacy. Sold in the markets of Italy under the name of Gallinacio (Turkey-cock) and in many French markets, often dried and sold in strings. It requires four hours' cooking.

A very pale almost white variety of the Chantarelle is occasionally met with.

110. *C. aurantiaous* Fr.—Pileus fleshy, soft, often excentric, depressed, undulate, tomentose, at first involute at the margin; gills decurrent, crowded, repeatedly branched, often intense orange; stem stuffed, at length hollow, somewhat unequal, ochraceous, sometimes becoming black. The pileus is light yellow and the gills white; a white variety occurs with cream-coloured gills.

Very common in woods, especially fir, from June to December; always puzzling to beginners, as the gills are often so thin as to suggest *Agaricus*. The whole plant is ochraceous and leathery-tough, and resembles a small, thin, attenuated variety of the Chantarelle. Said to be poisonous. Taste unpleasant.

GENUS XI. *NYCTALIS* Fr. is not represented by a model.

#### GENUS XII. *MARASMIUS* Fr.

The species closely resemble those of *Agaricus* of the subgenus *Collybia*; they are, however, more tough and dry; they shrivel in dry weather and revive with moisture, and so are much less putrescent than *Agaricus*. The stem is more cartilaginous or horny than the pileus; the gills are usually somewhat distant, with an acute edge. They grow on old stumps, twigs, dead leaves, etc.; some are terrestrial. The odour of new meal so common in *Agaricus* is sometimes replaced in *Marasmius* by one of onions or garlic; several of the species are highly fetid. Most of them are small in size. There are forty-three British species, three of which are represented by models.

111. *M. porreus* Fr.—Pileus opaque dull yellow, paler when dry, thin but leathery, flaccid, convex, then flattened, obtuse, even on the disc, striate at the margin; flesh pallid; gills free, distant, somewhat thick, tough, broadly linear, at length leathery, light yellowish, becoming paler; stem stuffed, then hollow, tough, juiceless, pubescent, somewhat thickened at both ends, red-brown, paler at the apex.

Frequent in woods, especially among oak leaves, from September to December. Its strong odour of garlic is characteristic, but not

peculiar, as other species possess it; the odour passes away in drying.

112. *M. oreades* Fr. (Fairy-ring Champignon).—Pileus at first pale livid buff in colour, with a darker disc, becoming paler when dry, hygrophanous, convex, then plane, somewhat umbonate, even, smooth, slightly striate at the margin when moist; gills free, very broad, distant, at first soft, then firmer, pallid-whitish; stem solid, tough, stiff and straight, pallid, entirely naked, not hairy or distinctly downy.

Grows in rings and groups during spring, summer, and autumn, in poor pastures, on lawns and downs, and by grassy roadsides. The odour is weak but agreeable, stronger when dried; taste mild. Esculent, delicious when fried in butter. It may be pickled, or dried for winter use; and a delicate, almost colourless ketchup is made from it.



Fig. 41.—*Marasmius oreades* Fr.  
(One-half natural size.)

113. *M. rotula* Fr.—Pileus whitish, or with a small brownish umbilicus, membranous, dry, convex, plicate at margin; gills few, distant, white; stem horny, hollow, equal, shining deep brown or blackish, striate when dry.

Frequent; it is small in size and grows gregariously on dead twigs in woods and by hedgesides from June to January; recognised by the peculiar attachment of the gills to a collar which encircles, but does not touch, the top of the stem.

### GENUS XIII. LENTINUS Fr.

The species are distinctly cartilaginous-leathery, generally irregular in growth, with the gills minutely toothed or torn at the edge, sometimes requiring a lens to detect the serration. The British species grow on stumps and trunks, and though not brightly coloured, are attractive and often beautiful. There are eleven British species, one of which is represented by a model.



Fig. 42.—*Lentinus cochleatus* Fr.  
(One-quarter natural size.)

114. *L. tigrinus* Fr.—Pileus creamy-whitish, variegated with blackish hairy squamules, fleshy-leathery, thin, convexo-plane, umbilicate, at length infundibuliform, often split at the margin when dry; gills decurrent, narrow, crowded, unequal, toothed, white; stem thin, solid,

hard, attenuate downwards, squamulose, creamy-white, fuscous at the base, furnished at the apex with an entire, reflexed, fugacious ring.

Rare and grows upon stumps, old trunks, and branches in gregarious or cæspitose manner from June to October. Acrid, odour strong.

GENERA XIV. *PANUS* Fr., XV. *XEROTUS* Fr., XVI. *TROGIA* Fr., XVII. *SCHIZOPHYLLUM* Fr., and XVIII. *LENZITES* Fr., are unrepresented by models.

## FAMILY II. POLYPORACEÆ.

The under-surface of the pileus is covered with small, closely packed tubes. The tubes are lined with cells, some of these, the basidia, bear spores in groups of four in the same manner as in the *Agaricaceæ* (see fig. 1, page 2). The species are fleshy, leathery, or woody. There are 255 British species, nineteen of which are represented by models.

### GENUS XIX. BOLETUS L.

The spongy stratum of small, vertical, closely packed tubes is easily separated from the under-surface of the pileus. All the species have central stems, and are fleshy and putrescent. They are terrestrial, and many are esculent. In the edible species the tubes should be scraped away before cooking. There are sixty-four British species, thirteen of which are represented by models.

115. *B. luteus* L.—Pileus yellowish, smeared with a separable brown glutinous covering, gibbous, then pulvinate; flesh white; tubes adnate; pores minute, simple, yellow; stem equal, firm, whitish, rough with dots above the large membranous white-brown ring.

Very common in pine woods from late summer to early winter. Edible and highly esteemed.

116. *B. granulatus* L.—Pileus yellowish, smeared with a thick reddish-brown glutinous covering, convexo-expanded; flesh light yellowish; tubes adnate, short; stem ringless, light yellowish, often attenuate, and dotted above with granules.

Grows from July to November in fir woods, often gregariously, and is easily recognised by the minute sugar-like granules at the mouths of the pores produced by the drying of the milky fluid. Said to be edible.

117. *B. bovinus* L.—Pileus yellowish or reddish buff, with a thin, non-separating glutinous covering of the same colour; flesh white; tubes shallow, somewhat decurrent; pores compound, greyish-yellow or greenish, becoming brown; stem equal, even, of the same colour as the pileus.

Grows locally in woods, chiefly pine, from September to November ; it is generally gregarious.

118. *B. piperatus* Bull.—Pileus yellow or orange-ochre, sometimes pale, convexo-plane, smooth, slightly viscid ; tubes decurrent, bright ferruginous-red, almost vermilion ; pores large, angular ; stem slender, even, fragile, same colour as the pileus, containing yellow milk at the base.

Frequent in woods from August to November, and very different in appearance from the other British species ; it is generally small. Acid, poisonous.

119. *B. sanguineus* With.—Pileus viscid, becoming crimson-brown and convexo-plane with age ; flesh white, slightly tinged with crimson next the skin, and slowly changing to bluish when cut or broken ; tubes adnate, orange-yellow ; pores large, unequal ; stem equal, even, bright yellow splashed with crimson.

In woods, not common ; from July to November.

120. *B. variegatus* Sw.—Pileus rich yellow, hairy squamulose convex, then plane, slightly moist, sprinkled with superficial separating sciculate hairy squamules ; flesh yellow, changing in places to azure-blue on being cut or broken ; tubes adnate, unequal ; pores minute, brown, then cinnamon ; stem firm, equal, even, deep yellow or reddish.

Grows chiefly in pine woods from July to November. Odour unpleasant ; taste mild.

121. *B. subtomentosus* L.—Pileus brown, sometimes tending to Olivaceous, soft, dry, velvety, pulvinato-expanded, often fissured, and when cracked the interstices becoming yellow ; flesh white, pallid, brownish beneath the cuticle ; tubes adnate ; pores large, angular, yellow ; stem short, attenuate downwards, faintly ribbed, slightly rough.

Common from July to November in mixed woods, but especially beech, where it frequently grows amongst and on beech-nuts.

122. *B. pachypus* Fr.—Pileus brownish-ochre, then tan-colour, pulvinate, slightly velvety ; flesh whitish or pale yellowish, changing to azure-blue on being cut or broken ; tubes long, shortened round the stem ; pores round, yellow, at length greenish ; stem thick, firm, somewhat short, ovato-bulbous, reticulate, variegated yellow and red, sometimes wholly blood-red.

A large and beautiful species, common in mixed woods in September and October.

123. *B. edulis* Bull.—Pileus light brown, bay, or chestnut, rarely whitish or grey-brown, pulvinate, smooth, moist ; flesh white, unchanging when cut or broken, compact, brownish beneath the



cuticle; tubes almost free, elongate, minute, at first white, then yellow-green, at length olive-greenish, stem stout, often swollen, pale brown, reticulate with fine white network at apex (best seen under a lens).



Fig. 43.—*Boletus edulis* Bull.  
(One-quarter natural size.)

Very common in woods, especially beech, from early summer to early winter, and easily distinguished from the other British species. Usually large and obese. Esculent; one of the best, but the flesh is somewhat soft and tasteless when cooked. When cooked with meat or in gravy it is excellent. It is in the best condition for cooking when the tube surface is pale yellowish. This is the common edible *Boletus* of Continental markets, where it is sometimes sold under the name *Cépe* or *Ceps*. It is the *Porcino* (pig) or *Ferré* of Italian markets.

A brilliant yellow parasitic mould (*Hypomyces chrysospermus*) often attacks the tubes of *B. edulis*, *B. subtomentosus*, and *B. scaber*.

124. *B. satanas* Lenz.—Pileus pale brownish-tan, becoming nearly white, pulvinate, smooth, somewhat viscid; flesh whitish, often with bright crimson patches at the base of the stem, becoming bright blue when bruised or broken; tubes free, yellow; pores minute, at first blood-scarlet, becoming vermilion or orange when old; stem very stout, ventricose, beautifully marked at apex with blood-red reticulations.

A rare, often large, and handsome inhabitant of woods and woody places from July to October. Said to be dangerous, but probably harmless. Taste mild.

125. *B. luridus* Schæff.—Pileus dark brown, tomentose, at length somewhat viscid, pulvinate; flesh yellow, often red at the base of the stem, quickly changing to dark blue on being cut or broken; tubes free, yellow, at length green; pores round, dull scarlet, becoming dull scarlet-orange; stem somewhat long, stout, frequently enlarged below, orange-red or orange-brown, commonly rough with dots or coarse reticulations.

*B. luridus* is an ally of *B. satanas*, very common in woods and woody places from June to November. Taste not unpleasant. Said to be poisonous, but sold as an esculent in the markets of Prague under the name of *Kowar*, and frequently eaten in Vienna under the name of *Schuster*.

126. *B. versipellis* Fr.—Pileus constantly rufous, pulvinate, dry, at first compact and velvety, then scaly and even, with fragments of the annular membranous veil; tubes free, plane, minute, dingy white; pores grey; stem solid, attenuate upwards, wrinkled-scaly.

A common fungus in woods, woody places, and on heaths from July to October.

127. *B. scaber* Bull.—Pileus pulvinate, smooth, viscid when moist, brown, varying orange or red, rarely black or white, rugulose or rivulose, margin at first cortinate; tubes free, convex, white, then dingy; pores white, minute round—the whole plant generally changes to a slaty-brown hue on being cut or broken; stem solid, long, attenuate upwards, rough and granular with dark particles.

Generally large in size, easily recognised, and one of the commonest inhabitants of woods from early summer till early winter. Edible; the Porcinello (little pig) or Albarello of Italian markets.

The orange-red variety is often confounded with *B. versipellis*, which has a constantly rufous, dry, and tomentose pileus.

GENUS XX. STROBILOMYCES Berk. is unrepresented by a model.

#### GENUS XXI. FISTULINA Bull.

Distinguished from *Polyporus* by the tubes being slightly distinct and separable from each other and not longitudinally adpressed and conjoined. There is one British species.

128. *F. hepatica* Fr. (Beefsteak Fungus).—Pileus dark crimson-brown, resembling liver; flesh thick, roundish, dimidiate, tongue-shaped, juicy, traversed by fibres, variegated flesh-colour and crimson, slicing like beef-steak; tubes convex, distilling a pellucid juice, at first pallid, then flesh-colour or ochraceous-carnation.

Common from August to October on living oaks, less so on the trunks of the willow, beech, walnut, chestnut, and ash. Imbricate and attaining an enormous size and weight, sometimes nearly 30 lb.; it grows with rapidity when the weather is favourable, and may reach its full size in a fortnight. Unlike *Polyporus*, *Fistulina* perishes in about three weeks from the time of its first appearance. Esculent and said to be nourishing, but very tough when young and with a somewhat acid flavour not pleasant to all tastes. It is not fit for the table till it is quite ripe, when it becomes tender; it may be minced, soaked in boiling vinegar and served with minced veal and lemon.



Fig. 44.—*Fistulina hepatica* Fr.  
(One-fifth natural size.)

GENUS XXII. **POLYPORUS** Fr.

The tubes are connate with the substance of the pileus; they do not readily peel away, as in *Boletus*, nor are they separate from one another, as in *Fistulina*. Most of the species grow on stumps and trunks, a few on the ground; they are generally persistent and often perennial, yearly adding new zones of growth. There are 143 British species, four of which are represented by models.

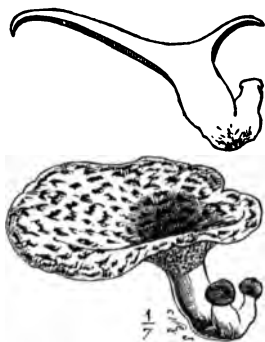


Fig. 45.—*Polyporus squamosus* Fr. (One-seventh natural size.)

129. **P. lucidus** Fr.—Pileus corky or woody, usually kidney-shaped and broadly furrowed; tubes long, minute, white, at length whitish-brown; stem hard, lateral, usually long and irregular in form, lustrous and of the same colour as the pileus.

Frequent from October to April on rotting stumps, and known from every other British species of *Polyporus* by its shining-brilliant crimson-chestnut pileus and stem.

This fungus has been found preserved in peaty beds in the fens of the eastern counties; it also occurs, with *P. igniarius*, *P. fomentarius*, and *Dædalea quercina*, in the lake-side pile-dwellings of Switzerland and Italy.

130. **P. sulphureus** Fr.—Pileus juicy-cheesy, fleshy, undulate, somewhat smooth; flesh light sulphur-colour, often splitting, when mature and vigorous, containing sulphur-yellow milk; pores minute, plane, sulphur-yellow; usually stemless.

A beautiful and easily recognised species, growing from May to October, on living trees and stumps, often cæspitose, it is frequent on old yews. A well-marked characteristic is its distinct sulphur-colour, sometimes spotted with saffron-red. It is sometimes luminous.

131. **P. cæsius** Fr.—Pileus fleshy, unequal, silky; tubes very small, unequal, long; pores torn into teeth. The tubes change colour to a faint bluish-grey on being bruised, and by this character it may be easily recognised.

Common from March to November on dead firs, sometimes on rotten stem fragments. The whole plant is ivory-white, softish-tough, and stemless.

132. **P. betulinus** Fr.—Pileus white, then brownish, fleshy, corky, hoof-shaped, zoneless, edge obtuse, pellicle thin, cracking, and sometimes separating; tubes short, minute, whitish, at length separating.

Common on living and dead trunks and branches of birch from

May to January. The "razor-strop fungus," thick slices of flesh cut from large examples, were at one time used by rustics as razor-strops.

The mycelium sometimes forms sheets like hard leather beneath the bark of birches, and, without producing pilei, destroys the firmest wood. This leathery mycelium has been described under the name of *Xylostroma giganteum*.

GENERA XXIII. TRAMETES Fr., and XXIV. DÆDALEA Pers., are unrepresented by models.

GENUS XXV. **MERULIUS** Halle.

The whole plant is at first resupinate, and the hymenium is reticulate with obtuse folds, becoming gyrose and imperfectly toothed, developed from a soft mucedinous substratum. There are twelve British species, one of which is represented by a model.

133. *M. lacrymans* Schum. (Dry-rot).—The substance, when in full vigour, fleshy, moist, and pale buff in colour, with a swollen, white, downy margin; the spore-producing portion, or hymenium, consists of shallow, labyrinthine, gyrose, toothed folds, rich orange-cinnamon in colour; when mature and in vigorous growth, drops of watery fluid are exuded from the hymenium.

Dry-rot is common at all times of the year in buildings, particularly in unventilated spaces, on squared wood, especially pine, but spreading to other woods (it will spread from pine to teak and destroy it) and over plaster, mortar, and other substances, where it perfects itself. Practically unknown on squared timber out of doors, or on fallen pines. Wooden ships were in past times extensively destroyed by it. During the reign of Charles II. a commission was formed to inquire into the state of the navy, and Pepys, who was secretary to the Admiralty, tells of thirty new ships that for want of proper care and attention had toadstools growing in their holds as big as his fists, and were in so complete a state of decay that some of the planks had dropped from their places.

A writer in the *European Magazine* for 1811 describes a ship attacked by dry-rot at Woolwich, which was in so bad a state that the decks sunk under a man's weight, and the orange and brown-coloured fungus was seen hanging in the shape of inverted cones from deck to deck. The dry-rot of oak-built vessels is *Polyporus hybridus* B. & Br.

GENUS XXVI. POROTHELIUM Fr. is unrepresented by a model.

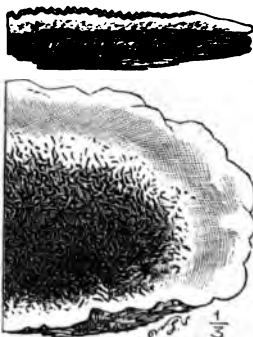


Fig. 46.—*Merulius lacrymans* Schum. (One-third natural size.)

## FAMILY III. HYDNACEÆ.

In the *Hydnaceæ* the gills of the *Agaricaceæ* and the tubes of the *Polyporaceæ* are represented by spines, teeth, tubercles, crests, or papillæ.

GENUS XXVII. *HYDNUM* L.

Spines awl-shaped. There are sixty-three British species, two of which are represented by models.

134. *H. imbricatum* L.—Pileus generally depressed, rich, dark, rufescent-brown, sometimes plane but generally broken up into coarse, floccose patches; flesh firm, hard, grey- or brownish-white; spines long, decurrent, of the same colour; stem short, even, often attenuate towards base.

A large plant found in pine woods, from September to November; rare but sometimes locally abundant. Said to be edible, but tough, bitter, and disagreeable.

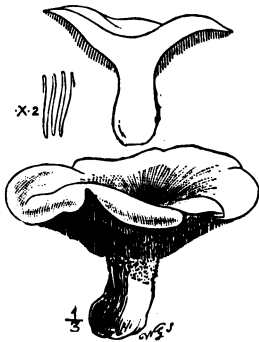


Fig. 47.—*Hydnum repandum* L.  
(One-third natural size.)

135. *H. repandum* L.—Pileus fleshy, lobed and repand, smooth; spines long, unequal; stem central or nearly so, irregular.

Common in mixed woods from August to November, where it grows singly, or in clusters or rings; the colour of the entire plant is buff-white or ochraceous-white. Edible; requires four hours' slow stewing. Has been eaten raw by enthusiasts in very thin slices between bread as sandwiches.

GENERA XXVIII. *TREMELLODON* Fr., XXIX. *SISTOTREMA* Pers., XXX. *IRPEK* Fr., XXXI. *RADULUM* Fr., XXXII. *PHLEBIA* Fr., XXXIII. *GRANDINIA* Fr., XXXIV. *ODONTIA* Pers., XXXV. *KNEIFFIA* Fr., and XXXVI. *MUCRONELLA* Fr. are not represented by models.

## FAMILY IV. THELEPHORACEÆ.

In the *Thelephoraceæ* there are neither gills, tubes, nor spines; the hymenium is even, rarely ribbed, or spuriously papillose. All the species are either waxy or coriaceous. There are 154 British species, only six of which are represented by models.

GENUS XXXVII. *CRATERELLUS* Pers.

All the species are terrestrial, stipitate, and have a pileus; hymenium waxy-membranous, continuous with the stem, even or

slightly and irregularly veined. There are six British species ; one is represented by a model.

136. *C. crispus* Fr.—Pileus fuliginous, becoming fuscous, fleshy-membranous, tubiform or infundibuliform, crisped ; stem stuffed at base, pallid ; hymenium even, pallid.

Common in mixed woods, from August to November. Strong musky smell.

GENUS XXXVIII. **THELEPHORA** Ehrh.

The species are varied in form, being pileate, clavate, or resupinate ; the hymenium even or ribbed. Nearly all are terrestrial, but a few grow on stumps, twigs, dead acorns, etc. There are twenty-one British species ; two of these are represented by models.

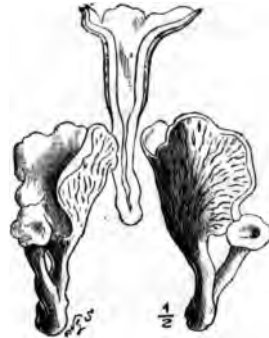


Fig. 48.—*Craterellus lutescens* Fr.  
(One-half natural size.)

137. *T. Sowerbeii* Berk.—Pileus leathery, entire, infundibuliform, rough with radiating processes projecting from the surface, white, at length dull yellowish ; hymenium smooth.

Rare, terrestrial. October and November.

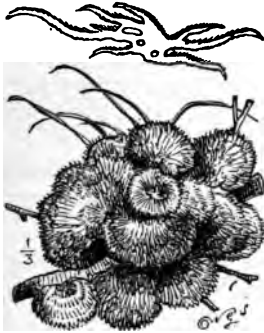


Fig. 49.—*Thelephora laciniata*  
Pers. (One-third natural size.)

138. *T. laciniata* Pers.—Pileus thin, imbricate, fibrous-scaly, ridged ; margin fibrous, fringed, at first whitish ; hymenium papillose, flocculose.

Common from August to November in woods, chiefly fir, often growing on fir stumps or on masses of fir leaves. Perennial ; whole plant rich dark brown and leathery-soft.

GENUS XXXIX. **CLADODERRIS** Fr. is unrepresented by a model.

GENUS XL. **STEREUM** Pers.

The species are woody, mostly perennial, somewhat zoned, entire ; pileus fibrous-coated ; hymenium inferior, leathery. There are fourteen British species ; one is represented by a model.

139. *S. hirsutum* Pers.—Pileus covered with short, stiff, yellowish-pallid or grey hairs ; margin yellow ; hymenium even, smooth, and yellowish ; whole plant thin, leathery, stiff, whitish-ochre

or yellow-buff in colour, but varying through yellowish-greys and browns.

Common on stumps, readily found at all seasons of the year.

A deep rose-red stain is frequent on this fungus, caused by a parasitic mould, *Hypomyces rosellus*.



Fig. 50.—*Stereum hirsutum* Pers.  
(Natural size).

#### GENUS XLI. HYMENOCHÆTE Lév.

Pileus coriaceous, variable in form, hymenium plane to papillose, velvety with minute rigid persistent setæ.

There are thirteen British species, one of which is represented by a model.

140. *H. tabacina* Lév.—Pileus rich dark rusty brown, with a yellow margin, leathery and thin; hymenium paler and varying in tint.

Somewhat uncommon, found on fallen branches in woods.

GENERA XLII. CORTICIUM Pers., XLIII. PENIOPHORA Cooke, XLIV. CONIOPHORA DC., XLV. EXOBASIDIUM Woronin, XLVI. CYPHELLA Fr., and XLVII. SOLENIA Hoffm., are unrepresented by models.

### FAMILY V. CLAVARIACEÆ.

The *Clavariaceæ* are usually vertical, club-like, simple or branched, fleshy, never leathery. There are eighty-four British species, twelve of which are represented by models.

GENUS XLVIII. SPARASSIS Fr. is unrepresented by a model.

#### GENUS XLIX. CLAVARIA L.

The species are usually small, vertical, club-like, simple or branched, generally terrestrial and usually white or yellow. There are fifty-three British species, ten of which are represented by models.

It is said that all the large species, whether white or yellow, are sold indiscriminately in the markets of France as articles of food.

141. *C. botrytis* Pers.—White, yellowish, or flesh-colour, fragile; trunk thick, unequal, much branched; branches swollen, unequal, somewhat wrinkled, reddish at apices.

Rare in woods, from August to November, growing about pine and beech stumps.

142. *C. coralloides* L.—White, cæspitose, somewhat fragile, hollow within; trunk rather thick, repeatedly and irregularly



Fig. 51.—*Clavaria cinerea* Bull.  
(One-third natural size.)



Fig. 52.—*Clavaria vermicularis*  
Fr. (One-half natural size.)

branched; branches unequal, dilated upwards; branchlets crowded, acute.

Rare in shady woods from August to November. Edible. Sold in the markets of Italy.

143. *C. stricta* Pers.—Yellowish-pallid, fuscous when bruised; trunk thick, much branched; branches and branchlets stiff, straight, even, adpressed, crowded, acute.

Grows in woods on and about stumps from August to November, uncommon.

144. *C. fusiformis* Sow.—Known from all other British species of *Clavaria* by the toothed or pointed fuscous apex of each generally simple yellow club; trunks connate, slightly firm, even, soon hollow, and attenuate at the base.

A common plant in woods and pastures from September to November.

145. *C. inæqualis* Müll.—Yellow, gregarious, somewhat fasciculate, compressed or channelled; trunks variable, simple or forked, sometimes jagged at the apex and ventricose in centre; tufts much less dense than in *C. fusiformis*.

Common in woods and pastures from August to November.

146. *C. fragilis* Holmsk.—Trunks club-shaped, white or yellowish, fasciculate, very fragile, attenuate downwards, hollow, somewhat obtuse, simple, rarely forked, often compressed, twisted, and wrinkled; base white.

Common in pastures, by grassy roadsides, etc., from August to November.



147. *C. acuta* Sow.—White, stem distinct from club, simple, cylindrical, stiff, straight, sharp-pointed, pruinose.

On soil in garden pots, September to November. Rare.

148. *C. pistillaris* L.—Light yellow or buff, then brownish, fleshy, stuffed, obovato-clavate, obtuse.

The stoutest of the British species, resembling an obese club; not uncommon in woods, grassy lanes, etc., from September to November.

149. *C. tuberosa* Sow.—Yellowish, springing from a thick, strigose, subglobose tuber, producing two or three simple, linear, tough, subacute clubs from the same base.

Grows on birch in November, and is very rare.

150. *C. ardenia* Sow.—Buff-brown in colour, simple, eight or more inches long, hollow, thickened upwards, acute, then obtuse, often depressed at the apex when fully grown, tomentose at base, not rooting.

Very rare. It grows on the ground, on fallen branches, fir leaves, etc., in October and November.

GENERA L. CALOCERA Fr., and LI. PTERULA Fr., are unrepresented by models.

#### GENUS LII. *TYPHULA* Fr.

The species of *Typhula* resemble tender, hair-like species of *Clavaria*. All except one, which is terrestrial, grow on twigs, leaves, straw, moss, etc. There are twelve British species, two of which are represented by models. Five species spring from a small hard mass of compact mycelium termed a *sclerotium*.



Fig. 53.—*Typhula phacorrhiza* Fr. (One-half natural size.)

151. *T. phacorrhiza* Fr.—Stems or threads pallid, becoming somewhat fuscous below, simple, elongate, filiform, smooth, downy at the base. The hardened mycelium from which it springs has been named *Sclerotium scutellatum*.

In woods and hedges in October and November, on dead herbaceous stems, leaves, etc.; uncommon, but sometimes found in considerable abundance in patches. It may spring direct from sclerotia buried in the ground.

152. *T. gracilis* Berk. & Desm.—Club pallid, simple or forked, acute, rough with spores and little prominent bristles; stem distinct from club, smooth or bristly.

Very small, growing on decaying leaves in December. Uncommon.

GENUS LIII. PISTILLARIA Fr. is unrepresented by a model.

#### FAMILY VI. TREMELLINACEÆ.

The *Tremellinaceæ* are homogeneous, gelatinous, shrivelling when dry, reviving when moistened. There are forty-three British species, four of which are represented by models.

#### GENUS LIV. AURICULARIA Bull.

The species are gelatinous and tremulous when moist, leathery when dry; hymenium inferior, remotely and irregularly costato-plicate. There are two British species; one is represented by a model.

153. *A. mesenterica* Pers.—Pilei lobed and twisted, fuscous-cinereous, zoned with browns, dull purples, and livid hues, hairy; hymenium coarsely veined, livid or fuscous-violaceous. The whole plant is somewhat firmly gelatinous; in wet weather, cartilaginous; and the leathery condition assumed in dry weather disappears with moisture.

Frequent from January to November on stumps and old branches; sometimes forming a large mass.



Fig. 54.—*Auricularia mesenterica* Pers. (One-third natural size.)

#### GENUS LV. HIRNEOLA Fr.

Gelatinous, inclining to cartilaginous, when dry leathery-horny, cup-shaped, reviving when moistened. There is only one British species.



Fig. 55.—*Hirneola Auricula-Judæ* Berk. (One-third natural size.)

154. *H. Auricula-Judæ* Berk. (Jew's Ear).—Cinereous-olive or brownish flesh-colour, at length black, thin, concave, flexuous, somewhat like a human ear, veined and folded without and within, tomentose on the under-surface.

Local throughout the year on old trunks, especially elder and elm.

#### GENUS LVI. EXIDIA Fr.

Jelly-like when moist, tremulous, somewhat marginate, papillose. There

are four British species, one of which is represented by a model.



Fig. 56.—*Exidia glandulosa* Fr.  
(Natural size.)

155. *E. recisa* Fr.—Brownish-yellow, very soft; disc truncato-plane, ribbed, papillose, rough with dots beneath; attachment excentric, oblique.

Common from September to December on dead wood, willow, etc.

The closely allied *E. glandulosa* Fr. is known as "Witches' Butter."

GENUS LVII. *ULOCOLLA* Bref. is unrepresented by a model.

#### GENUS LVIII. *TREMELLA* Fr.

The species are jelly-like when moist, tremulous, and immarginate, not papillate; there are fifteen British species, three of which are represented by models.

156. *T. frondosa* Fr.—Very large, cæspitose, even, plicate at base; lobes gyroso-undulate, semi-transparent, rosy-yellow or yellowish.

Rare on the roots of living trees, oak, etc., from July to November.

157. *T. mesenterica* Retz.—Flesh somewhat tough, and the surface simple, plicato-undulate, and gyrose; when full grown pulverulent with the spores.

Very common on dead sticks of furze, broom, etc., and known from the other British species by its brilliant shining-orange colour. It sometimes appears in the winter.

158. *T. moriformis* Sm.—Small in size, gelatinous, firm, spherical, sinuous, and opaque. The interior mass is translucent violet.

It grows from June to February on dead branches, and is rare. It is known by its mulberry colour.



Fig. 57.—*Tremella mesenterica* Retz. (Natural size.)

GENERA LIX. *NEMATelia* Fr., LX. *Gyrocephalus* Pers., LXI. *Dacryomyces* Nees, LXII. *Femsjonia* Fr., LXIII. *Guepinia* Fr., and LXIV. *Ditiola* Fr., are unrepresented by models.

## ORDER II. GASTEROMYCETES.

In the *Gasteromycetes*, of which the puff-balls are good examples, the plants are at first globular; the hymenium is internal, and the spores are borne in fours on the basidia, as in the *Hymenomycetes*, and only become free when the fungus is ripe.

## FAMILY VII. PHALLOIDACEÆ.

In their early condition the *Phalloidaceæ* are globular and puff-ball-like; there is a gelatinous stratum immediately beneath the outer membrane, and the hymenium is deliquescent. There are four British genera and four species; three species are represented by models.

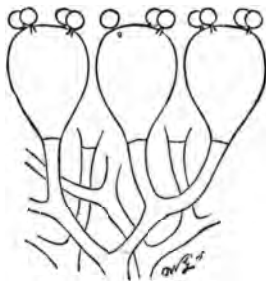


Fig. 58.—Spores on basidia from *Lycoperdon giganteum* Batsch. (Enlarged 500 diameters.)

## GENUS LXV. PHALLUS L.

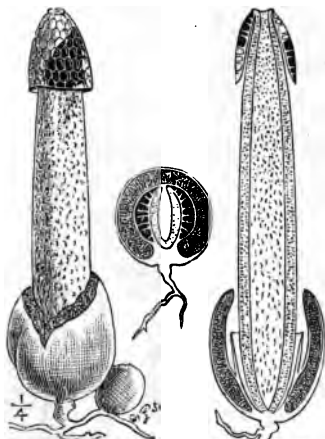


Fig. 59.—*Phallus impudicus* L. (One-quarter natural size.)

The pileus is perforated at the apex, free all round, and reticulate. The single British species is represented by a model.

159. *P. impudicus* L. (Stink-horn; sometimes called wood-witch or hedge-witch).—Pileus conical, perforated above, reticulate, white, when young filled with a deliquescent olive-black mucous mass; stem naked, elongate, hollow, honeycombed; volva pale buff-brown, containing pale olive-yellowish jelly.

Very fetid; common from May to August in gardens, shrubberies, woods, hedges, plantations, etc.; generally among rotten tree-roots, stumps, and branches.

## GENUS LXVI. MUTINUS Fr.

The pileus is adnate and imperforate above, uneven. The single British species is represented by a model.

160. *M. caninus* Fr.—Pileus continuous with the stem, wrinkled, imperforate, crimson, covered when young with olive-brown scentless

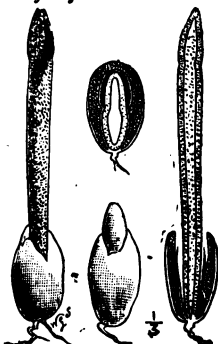


Fig. 60.—*Mutinus caninus* Fr. (One-third natural size.)

mucus ; stem hollow, white, faintly tinted with ochre, or orange ; volva pale buff-brown.

Uncommon, growing among decayed leaves in woods and hedges from June to December.

#### GENUS LXVII. CLATHRUS L.

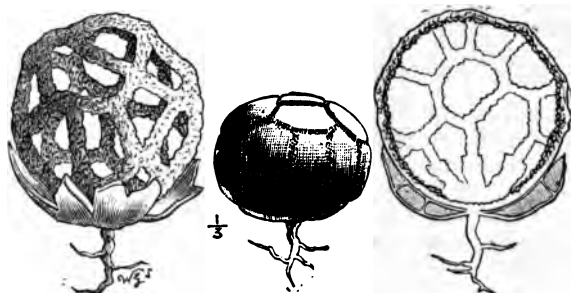


Fig. 61.—*Clathrus cancellatus* L. (One-third natural size.)

Volva becoming torn at the apex in a lacinate manner ; receptacle sessile, forming an obovate or globular hollow network, at first covered with mucus containing the spores. The

single British species is represented by a model.

161. *C. cancellatus* L.—Receptacle vermilion or bright orange-red, covered when young with olive mucus ; spores cylindrical, colourless. Odour very fetid.

On the ground, in gardens and woods, in October and November.

GENUS LXVIII. LYSURUS Fr. is unrepresented by a model.

#### FAMILY VIII. LYCOPERDACEÆ.

In the *Lycoperdaceæ* the peridium is double, and the hymenium at length dries up into a dusty mass mixed with a well-developed capillitium and spores. There are five British genera, of which four are represented by models.

#### GENUS LXIX. BATARREA Pers.

The volva is universal, central stratum gelatinous, and the receptacle pileiform, bursting through the volva, elevated at the top of a tall stem.

162. *B. phalloides* Pers.—Receptacle on top of stem, forming a pileus, covered with a brown, dusty mass of spores ; stem long, straight and firm, hollow, but filled with thin mucilage, exterior coarsely fibrous-scaly ; volva pale buff-brown, torn, containing jelly.

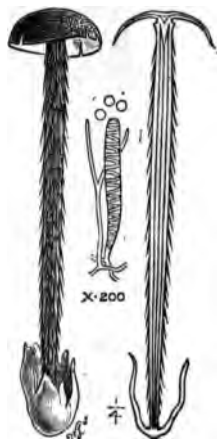


Fig. 62.—*Batarrea phalloides* Pers. (One-quarter natural size.) Paraphyses and spores  $\times 200$ .

Very rare ; it has been found in old hollow trees and on sandhills, sometimes in the winter.

GENERA LXX. TULOSTOMA Pers., and LXXI. QUELETIA Fr. are unrepresented by models.

GENUS LXXII. **GEASTER** Pers.

The peridium is double, the outer one distinct, persistent, bursting and dividing into several stellate lobes. The Geasters are popularly termed earth-stars or starry puff-balls. There are sixteen British species ; three of these are represented by models.

163. *G. coliformis* Pers.—Known from the other British species by its numerous ciliated apertures and the slender stems supporting the inner peridium ; outer peridium multifid, expanded.

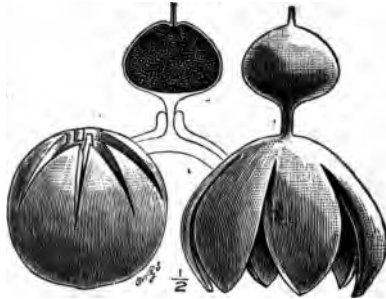


Fig. 63.—*Geaster limbatum* Fr. (One-half natural size.)

A rare species, found in sandy places in October.

164. *G. limbatum* Fr.—Outer peridium leathery, expanded, and multifid ; the inner is supported on a single, short stem, and the fimbriato-pilose mouth is elongated and acute, with a slight depression at the base.

One of the less common British species, found on the ground among leaves from September to November.

165. *G. mammosus* Chev.—Outer peridium multipartite, rigid, hygrometric ; laciniae equal ; inner peridium without a stem ; mouth ciliate, acutely-conical, surrounded by a circular disc.

The rarest and smallest of the British species ; grows on the ground from February to December.

GENUS LXXIII. **LYCOPERDON** L.

The peridium is double, the external layer or cortex becoming broken up into subsistent spine-like tufts or warts, inner layer smooth, dehiscing by a small apical mouth, the whole of the upper portion being sometimes evanescent. Sterile base usually stem-like. There are eighteen British species, three of which are represented by models.

166. *L. bovista* L. (Giant Puff-ball, usually referred to as *L. giganteum* Batsch.)—Peridium very fragile above and obtuse,

cracking, evanescent, at length widely open, white, sometimes very faintly shaded with buff or ochre, soft and smooth like kid leather; outer peridium floccose, rather distinct; spores dingy-olive.

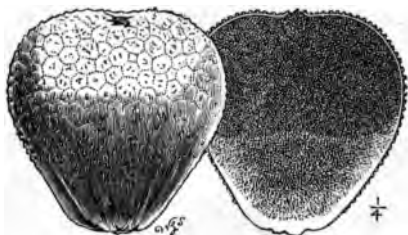


Fig. 64.—*Lycoperdon caelatum* Fr.  
(One-quarter natural size.)

Found in rich pastures, orchards, and grassy places; very abundant in some localities. Sometimes it grows in rings 30 ft. to 50 ft. in diameter. Edible when young, and when the flesh is firm and perfectly white; it must be rejected if the flesh is tinted with yellow.

It is distinguished from the other British species of puff-ball by its large size; it is usually about nine inches in diameter, but often much larger. Prof. Bessey, in the *American Naturalist* for May 1884, records an oval specimen found in Herkimer County, N.Y., measuring 5 ft. 4 in. in its greatest diameter by 4 ft. 6 in. in its least, though its height was only 9½ in. An example was sent to the *Gardeners' Chronicle* office in 1884 which measured 5 ft. 4 in. in circumference; and a specimen exhibited at the Edinburgh Fungus Show, in October 1878, was 4 ft. 6 in. in circumference and weighed 20 lb.

167. *L. caelatum* Bull.—Peridium flaccid above, falling in or collapsing, obtuse, dehiscent at apex, at length cup-shaped; inner peridium distinct; spores dingy-olive; base stem-like, blunt, spongy, obconical.

Common in pastures from May to October, and a large species, though smaller than *L. giganteum*. Odour disagreeable, musty, mouse-like.

168. *L. gemmatum* Batsch.—Globular with a narrow base, not smooth like *Bovista plumbea*, but scurfy or covered with sub-spinulose warts, white or ochreous-white, opening at maturity with a slightly umbonate mouth; there is a columella; spores greenish-yellow.

This small species is common on downs and in pastures from September to November.

Some of the small species of *Lycoperdon* are dangerous if eaten in a raw state; rapid inflammation of the throat and a greatly swollen tongue and neck have been known to ensue. This is probably true also of *Bovista*.

#### GENUS LXXIV. BOVISTA Pers.

The peridium is double, external layer or cortex smooth, fragile, deciduous, not remaining as adnate warts, but falling away in flakes;

inner layer smooth, dehiscing by a definite or irregularly torn apical orifice. There are seven British species, one of which is represented by a model.

169. **B. plumbea** Pers.—Peridium paper-like, flexible, lead-colour; cortex subpersistent at base; mouth narrow; capillitium and spores brown.

Small, and common in pastures and on downs. It commonly grows from July to November in company with *A. campestris*, and is sometimes taken by mushroom gatherers from its resemblance to button mushrooms.

Dr. Bull describes it as well-flavoured, rich, and good for the table when young.

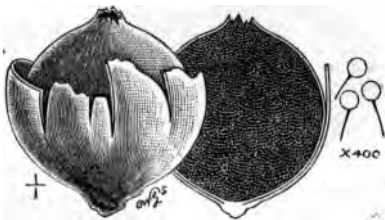


Fig. 65.—*Bovista plumbea* Pers. (Natural size.) Spores  $\times 400$ .

#### FAMILY IX. SCLERODERMACEÆ.

##### GENUS LXXV. POLYSACCUM DC.

The peridium is simple, rigid, bursting irregularly; internal mass divided into distinct cells filled with peridiola.

170. **P. pisocarpium** Fr.—Peridium smooth or somewhat tuberculose, roundish, reddish-brown-olive, dehiscing irregularly; filled with cavities with rigid walls; peridiola irregular, angular, yellow; stem short, abrupt.

Very rare; sandy places. May.

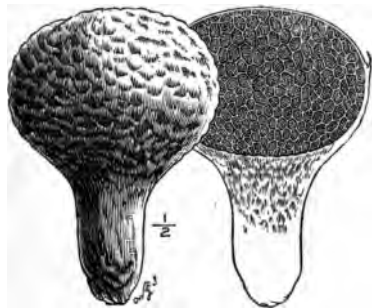


Fig. 66.—*Polysaccum pisocarpium* Fr. (One-half natural size.)

##### GENUS LXXVI.

##### SCLERODERMA Pers.

The peridium is firm, warty, bursting irregularly at the apex; internal flocci adhering on all sides to the peridium, and forming distinct veins in the central mass. There are four British

species, two of which are represented by models.

171. **S. vulgare** Hornem.—Exterior pale brownish-yellow, flecked with darker squarrose scales; the interior intensely blue-black speckled with white.

Common on open places in woods from August to November; it is partly immersed in the soil. Odour strong, rank, and



disagreeable. It can scarcely be termed edible, yet it has often been eaten, sometimes with the mistaken idea that it is a truffle.

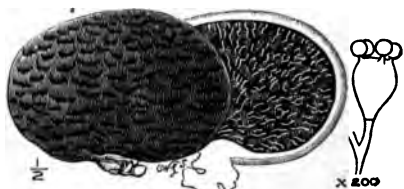


Fig. 67.—*Scleroderma vulgare* Hornem. (One-half natural size.) Basidium with spores  $\times 200$ .

It is frequently used for the adulteration of *pâté de foie gras*. In its young state it has been named Vegetable Tripe, and is then perhaps harmless.

Sometimes this fungus is attacked by a parasite, *Boletus parasiticus*, as large as or larger than itself, and this in

turn may be attacked by *Hypomyces luteovirens*.

172. *S. verrucosum* Pers.—Stem short, thick, lacunose; peridium subverrucose, thin above, and fragile; inner mass purplish-black; flocci and spores brown.

On sandy ground from July to November.

FAMILY X. NIDULARIACÆ with the GENERA LXXVII. CYATHUS Haller, LXXVIII. CRUCIBULUM Tul., LXXIX. NIDULARIA Bull., and LXXX. SPHÆROBOLUS Tode are unrepresented by models.

#### FAMILY XI. HYMENOGASTRACEÆ.

Subterranean fungi, differing from the true truffles in the spores being borne on basidia, and not enclosed in asci. There are six British genera and twenty-four species; one species is represented by a model.

GENUS LXXXI. OCTAVIANIA Vitt. is unrepresented by a model.

#### GENUS LXXXII. MELANOGASTER Corda.

The peridium has no distinct base; it contains hymenial chambers filled with spores, which are smooth.

173. *M. variegatus* Tul.—The exterior yellowish or ferruginous and finely granular; the interior soft, intensely blue-black, marbled with yellow.

Usually grows gregariously two or three inches beneath the surface from June to November; at other times it is partly exposed, and only covered by leaves and twigs. Under oaks, beeches, poplars, etc. The odour

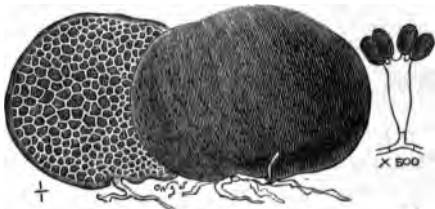


Fig. 68.—*Melanogaster variegatus* Tul. (Natural size.) Basidium with spores  $\times 500$ .

is strong, aromatic, agreeable, and not unlike that of bitter almonds; when cooked, the taste is sweet and approved by many.

Var. *Broomeianus* Berk.—Differs slightly from the type in the marbling being at first pale, then red, sometimes permanently pale, but never bright yellow. Externally reddish-ochre, becoming less bright; internally white, then pale yellow, at length smoky. The variety is scentless when young, but soon acquires a sweet treacley odour, or an odour of decaying pears, less powerful than the scent belonging to the type. Under beeches and Lombardy poplars.

Formerly this fungus was commonly sold in the markets of Bath under the name of the "Red Truffle," but of late years nothing has been seen of it in the shops or on the stalls. It is eaten on the Continent.

GENERA LXXXIII. HYDNANGIUM Wallr., LXXXIV. HYSTERANGIUM Vitt., LXXXV. RHIZOPOGON Fr., and LXXXVI. HYMENOGASTER Vitt. are unrepresented by models.

## CLASS II. ASCOMYCETES.

### ORDER I. DISCOMYCETES.

In the *Discomycetes* the spores are produced usually in series of eight, within cylindrical or club-shaped asci (Fig. 69). At maturity the asci open at the apex, sometimes with a minute lid or operculum, and set the spores free, as at A. Growing among the asci are slender bodies, as at B, termed paraphyses. The hymenium is exposed on the pileus or receptacle, which is cupulate, applanate, or mitrate, stipitate, sessile, or immersed; substance fleshy, waxy, gelatinous or rarely cartilaginous.

#### FAMILY I. HELVELLACEÆ.

Receptacle vertical, stipitate, pileate, mitrate, or claviform; bearing the hymenium on the upper surface, which is always exposed; substance between fleshy and waxy, rarely gelatinous.

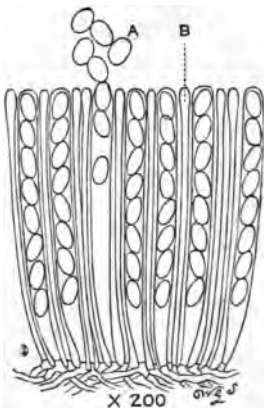


Fig. 69.—Asci with spores of *Morchella esculenta* L. (Enlarged 200 diameters.)

GENUS I. **MORCHELLA** L.

Receptacle stipitate, pileate, clavate, globose, or conical, clothed above by the deeply folded or angular-pitted hymenium; substance between waxy and fleshy. Two to twelve inches high, growing on the ground, chiefly in spring, firm, not soon decaying; odour pleasant. There are eight British species of *Morchella*, three of which are represented by models. Most are considered edible.

174. *M. esculenta* L. (Morel).—Pileus round, ovate, or oblong, and adnate at the base to the stem; ribs firm, anastomosing, the



Fig. 70.—*Morchella esculenta* L. (One-half natural size.)

intervals forming pits; the whole pileus when in good condition looks like a mass of honeycomb, yellowish or buff, but sometimes cinereous in colour; stem even or broadly furrowed, generally yellowish-buff, but variable in hue.

Grows in hedgesides and bushy places in spring and early summer; it prefers a limestone soil. Morels are often met with where ash and elm trees abound, and frequently on burnt ground, among dead twigs, etc. Odour faint, pleasant. Edible, but deficient in flavour and tough. Sold in Swiss markets. Morels can be readily dried on strings in a dry room; they should, however, not touch each other, as contact

favours the growth of mould. They are chiefly used for flavouring soups, sauces, and gravies, also for ketchup.

Sometimes the pileus of the growing fungus appears as if dusted with snuff. This is owing to the attack of a parasitic fungus, *Hypomyces cervinus*.

175. *M. conica* Pers.—Pileus tapering-conical, adnate at the base to the stem; primary ribs longitudinal, secondary forming transverse folds; pits elongate, narrow, plicato-lacunose; stem tapering upwards from the base, whitish.

Grows in woods and woody places. Edible.

176. *M. semilibera* DC.—Pileus conical, free half-way up; ribs longitudinal, forming oblong pits, which are veined within;

stem nearly even; colour lutescent, when dry dull fulvous, stem whitish.

Grows in woods and woody places in spring and early summer. Edible.

GENUS II. **GYROMITRA** Fr.

Receptacle stipitate, pileate, deflexed, bullato-inflated; ribs of hymenium gyrose. There are two British species, one of which is represented by a model.

177. *G. esculenta* Pers.—Pileus somewhat globose, inflated, irregularly undulate, gyroso-rugose, dark rich brown, margin annexed to the even, whitish-buff, villous stem; substance fleshy.

A very rare species in Britain; it grows on sandy ground in the spring. Said to be edible, but, according to the Rev. M. J. Berkeley, not always safe.



Fig. 71.—*Gyromitra esculenta* Pers.  
(One-half natural size).

GENUS III. **HELVELLA** L.

Receptacle stipitate, pileate, supported up the centre, deflexed, sinuous; hymenium even. There are twelve British species, of which the two commonest are represented by models. Most of the species are reputed edible. Some grow in spring, others in autumn.



Fig. 72.—*Helvella crispa* Fr.  
(Natural size.)

178. *H. crispa* Fr.—Pileus deflexed, lobed, free, undulate and contorted, very pale brown; stem fistulose, deeply ribbed and lacunose, white.

Not uncommon in autumn in woods and by damp, grassy roadsides near hedges. Edible, but with little flavour and very tough; it is best for the table when slowly stewed in white sauce.

179. *H. elastica* Bull.—Pileus orbicular, sometimes twice or thrice lobed, free, even, inflated; stem at first stuffed, then hollow, pruinose, thickened at base, sometimes slightly lacunose.

Grows in summer and autumn in moist places in woods and on shady, bushy banks.

GENUS IV. **VERPA** Sw.

Receptacle stipitate, regularly pileate, equally deflexed all round, conical; hymenium even or wrinkled. There are three British species, one of which is represented by a model.



Fig. 73.—*Verpa digitaliformis* Pers.  
(Natural size.)

180. **V. conica** Sw.—Pileus slightly fleshy, campanulate, nearly even, brown; margin subsinuate, yellow beneath as well as the slender equal round hollow stem.

Grows on heaths in spring, and is very rare.

GENUS V. **MITRULA** Fr.

Receptacle stipitate, globular or oval, immarginate, even, concrete with the stem. There are five British species, two of which are represented by models.



Fig. 74.—*Mitrula paludosa* Fr.  
(Natural size.)



Fig. 75. *Spathularia flavida* Pers.  
(Natural size.)

181. **M. cucullata** Fr.—Receptacle ovate, globose, or mitrate, even, yellowish-red or ferruginous, approaching black; stem slender, solid, even, or tomentose downwards, flexuous, darker than receptacle or brown-black.

Grows gregariously on decaying pine leaves in autumn.

182. **M. paludosa** Fr.—Receptacle usually globose or ovate, bright yellow or orange; stem slender, straight or flexuous, often enlarged upwards, white or tinted with ochre.

On decaying leaves and twigs, in marshes, pools, and wet places, in spring, summer, and autumn; generally gregarious or cæspitose.

GENUS VI. **SPATHULARIA** Pers.

Receptacle stipitate, vertical, compressed laterally, decurrent on opposite sides of stem. There is one British species, which is represented by a model.

183. **S. flavida** Pers.—Receptacle spathulate, compressed, undulate, nearly even, yellow; stem white or faintly tinted with ochre.

Not common; it grows from July to October on dead fir leaves and moss in damp woods; gregarious.

GENUS VII. **LEOTIA** Hill.

Receptacle stipitate, irregularly pileate, supported at the centre, orbicular, revolute at the margin; hymenium undulate or even. There are two British species, one of which is represented by a model.

184. **L. lubrica** Pers.—Receptacle irregularly globular, yellow-olivaceous-green, slimy; stem pulpy within, at length hollow, nearly equal, yellowish, clammy, with minute squamules.

Not uncommon in summer and autumn in woods and in damp, bushy places; gregarious, somewhat cæspitose.

FAMILY II. **PEZIZACEÆ.**

Receptacle adfixed by the centre, rarely by the whole underface, concave, plane or convex, sessile or stipitate, fleshy or waxy; hymenium on the upper surface.

Differs from the *Helvellaceæ* by the concave or plane receptacle.

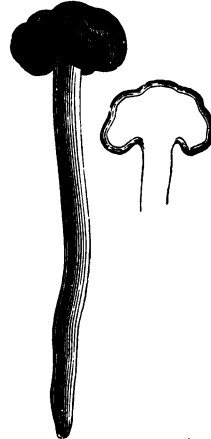


Fig. 76.—*Leotia lubrica* Pers. (Natural size)

GENUS VIII. **ACETABULA** Fuckel.

Cup entire, naked; stem stout, distinct, often sulcate. There is one British species, which is represented by a model.

185. **A. vulgaris** Fr.—Cup-shaped, furfuraceous, ribbed externally with branched veins, which run up from the short lacunose fistulose stem; cup brown within, lighter brown without; stem ribbed.

*A. vulgaris* (often referred to as *Peziza acetabulum* L.) is terrestrial, and generally grows in wet places in spring. Said to be edible.

Sometimes the cup of this fungus is dusted with brown powder, caused by the attack of a mould, *Hypomyces cervinus*.

GENUS IX. **PEZIZA** L.

Receptacle at first closed, afterwards expanding, cup-shaped, marginate; epidermis thin, contiguous, glabrous, pruinose or floccosofurfuraceous, persistent, distinct; cups adfixed to the centre, often stipitate, unfolding, more or less concave, often becoming plane; hymenium smooth, nearly always differing in colour; substance fleshy-membranous, not waxy or gelatinous. There are eighteen British species, four of which are represented by models.

186. **P. aurantia** CEd.—Cup almost sessile, more or less irregular, contorted, oblique, and split; externally somewhat pruinose, and whitish, tinted with orange; odour when drying not unlike apricots, but earthy.

A terrestrial species, often cæspitose, met with in summer and autumn in woods and gardens, common on paths, and among felled trees, branches, twigs, chips, etc.; known from other British species by its brilliant orange or scarlet-orange colour.

187. **P. cochleata** Bull.—Cup sessile, large, twisted, brown, externally pruinose.

Terrestrial, often densely cæspitose; frequent in summer and autumn.

188. **P. vesiculosa** Bull.—Cup large, entire, sessile, at first globose, margin somewhat crenate; pallid brown within, lighter without and furfuraceous; fragile, watery; the hymenium has a tendency to separate itself from the flesh of the cup at the bottom.

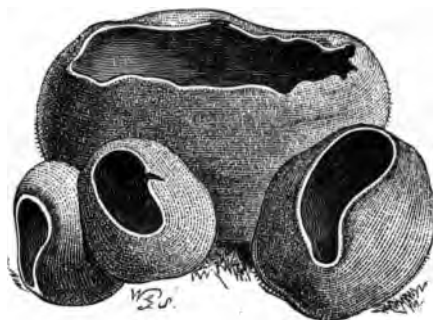


Fig. 77.—*Peziza vesiculosa* Bull. (Natural size.)

One of the most abundant British species; common on the ground in gardens, on manure heaps, on rotten leaves, tan, road-scrapings, etc.; spring to autumn, or even winter; generally cæspitose.

When the fungus is gathered the spores are elastically projected into the air, and may be distinctly seen as a faint cloud.

189. **P. cerea** Sow.—Cup large, infundibuliform, repand, fleshy, very fragile; hymenium yellowish; externally furfuraceous, whitish, with a villous stem-like base.

On the ground in spring among leaves, on tan, etc.; gregarious, cæspitose.

GENUS X. **OTIDEA** Pers.

Cup subsessile, externally pruinose, dimidiately elongate, or obliquely contorted, becoming incised on one side. There are eight British species, one of which is represented by a model.

190. **O. leporina** Batsch.—Substipitate, elongate on one side—somewhat resembling in form the ear of a hare; externally farinose, colour pale ochraceous, ochraceous-buff, or whitish-buff; base somewhat stem-like, of the same colour.

Rare; it grows from August to October among dead leaves in woods and bushy places; gregarious, often cæspitose.

GENUS XI. **SARCOSCYPHA** Fr.

Cups large, fleshy, distinctly stipitate, externally tomentose or hairy. There are four British species, one of which is represented by a model.

191. **S. coccinea** Jacq.—Cup with a distinct stem, funnel-shaped; plant externally whitish and downy; disc bright blood-red or carmine.

A somewhat uncommon fungus growing in spring on fallen sticks in woods, especially dead branches of hazel. Sometimes it grows on sticks covered with earth, as if growing on the ground. Easily recognised by its vivid colour. It rarely varies to wholly snow-white.



GENUS XII. **MACROPODIA** Fuckel. Fig. 78.—*Sarcoscypha coccinea* Jacq. (Natural size.)

Cups fleshy, stipitate, tomentoso-squamulose or flocculose externally, with a fuscous, umber or fuliginous disc. There are three British species, one of which is represented by a model.

192. **M. macropus** Pers.—Cup stipitate, hemispherical, then expanded, somewhat hairy; the whole plant externally ashy; disc mouse-coloured.

On the ground in shady woods. Summer and autumn.

GENUS XIII. **PLECTANIA** Fuckel.

Cups shortly stipitate, fleshy, or thin, fuscous—flocculose externally, with a black strigose or fibrous rooting base. The only British species is represented by a model.



193. *P. melastoma* Sow.—Cup substipitate; externally brick-red, downy-flocculose, bristly-hairy, sometimes naked; hymenium urceolate, black; stem short, rooting by means of thick, black strigose filaments.

Grows on rotten sticks, etc., in spring.

#### GENUS XIV. *HYMENOSCYPHA* Fr.

Receptacle cup-shaped, glabrous, with a slender stem. There are fifty British species, one of which is represented by a model.

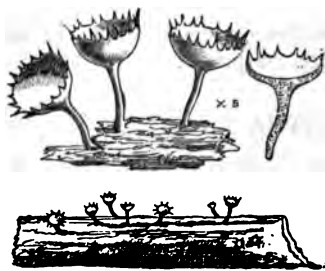


Fig. 79.—*Hymenoscypha coronata* Phill.  
(Natural size and enlarged five times.)

194. *H. firma* Phill.—Cup infundibuliform, then expanded, repand, firm, smooth, dark or pale brown; stem more or less elongate, becoming blackish-brown, attenuate downwards.

Common on rotten oak sticks; scattered or gregarious; leathery when fresh, hard when dry.

#### GENUS XV. *HELOTIUM* Fr.

Receptacle sessile or shortly stalked, disc, plane or convex, waxy, naked. There are thirty-six British species of *Helotium*, three of which are represented by models.

195. *H. virgultorum* Fr.—Stipitate, tough, glabrous; hymenium yellowish-red, at length rufous; cup patelliform or frequently convex; exterior paler; stem slender, attenuate downwards, subflocculose.

Common in autumn on twigs in damp, shady woods; gregarious.

196. *H. calyculus* Sow.—Cup stipitate, concave, margin elevated or expanded, bright clear yellowish-brown, fleshy, firm, smooth; stem thick, short, enlarging upwards into the cup.

Grows on decorticated wood and branches.

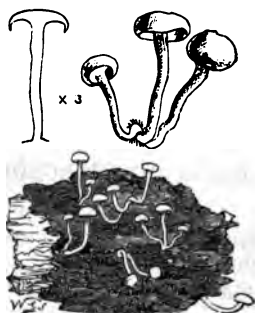


Fig. 80.—*Helotium aciculare* Fr.  
(Natural size and enlarged three times.)

197. *H. aciculare* Pers.—Receptacle waxy, white, fragile, undulate and convex at maturity; stem simple, slender, rarely branched, white, becoming crooked and discoloured.

Grows on decayed stumps near the ground in autumn; gregarious or scattered.

## GENUS XVI. BULGARIA Fr.

Receptacle cup-shaped, substipitate or sessile, glabrous; cups at maturity plane or slightly convex; excipulum gelatinous. There are two British species, one of which is represented by a model.

198. **B. inquinans** Fr. — Cæspitose, turbinate, firm, fleshy-gelatinous; externally wrinkled, rough, furfuraceous, umber; hymenium becoming plane, dark chocolate-brown, then black.

Common on fallen tree-trunks in autumn.



Fig. 8r.—*Bulgaria inquinans* Fr. (Natural size.)

## ORDER II. PYRENOMYCETES.

In the *Pyrenomyces* the asci are borne in flask-shaped bodies named *perithecia*, of carbonaceous or membranous consistency, sometimes confluent with the stroma, with an opening at the apex of each perithecium through which the spores escape.

## GENUS XVII. CORDYCEPS Fr.

Stroma erect, fleshy, clavate or capitate; perithecia immersed; spores linear, multi-septate, separating at the septa. There are seven British species, two of which are represented by models.

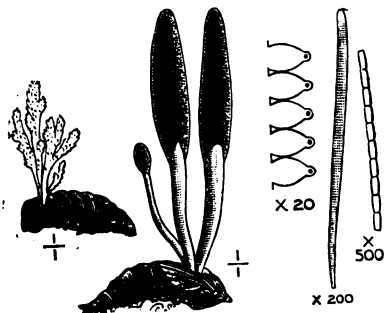


Fig. 8s.—*Cordyceps militaris* Fr., with branching conical state (*Isaria farinosa* Fr.). (Natural size.) Tubercles or perithecia of stroma  $\times 20$ . Ascus  $\times 200$ . Portion of septate spore  $\times 500$ .

199. **C. militaris** Fr.—At first subcæspitose, white, and mealy; then club-shaped and crimson, with the head minutely tuberculose from the mouths of the perithecia and with the stem equal.

Grows upon pupæ of moths in the ground.

200. **C. capitata** Fr.—Head ovato-globose, yellowish-brown, red-brown, or black; the stem usually lemon-yellow, at length becoming blackish.

Far less common than the last; it is much larger, and grows parasitically on *Elaphomyces granulatus*.

An allied species, *Cordyceps sinensis*, is sold in the markets of China as food. Caterpillars with the *Cordyceps* attached are tied with silk threads in small bundles; each bundle contains about eight or ten affected caterpillars, whose bodies are completely permeated by the mycelium of the fungus.

The best known of the larger species, *C. Robertsii*, grows on the larvæ of *Hepialus virescens* in New Zealand, and is popularly called the "vegetable caterpillar." When fully grown, this is six or eight inches high; it grows from the back of the second joint from the head of the victim, generally singly, but sometimes two from the same caterpillar. An Australian species, still more remarkable, *C. Taylorii*, grows on a large caterpillar, and attains a height of

eight inches, being repeatedly branched like the antler of a deer; it is ashy-black in colour, and from three to six grow in a cluster.

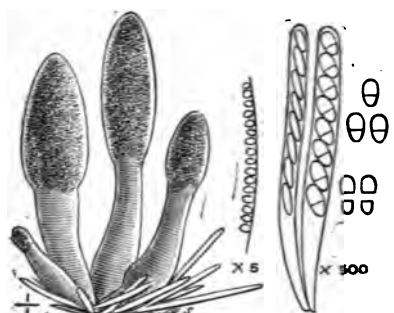


Fig. 83.—*Hypocrea alutacea* Fr. (Natural size.) Imbedded perithecia  $\times 5$ . Asci and spores  $\times 500$ .

#### GENUS XVIII. HYPOCREA Fr.

Stroma variable; perithecia fleshy, pallid or coloured, ovato-globose and obtuse. There are nine British species, one of which is represented by a model.

201. *H. alutacea* Fr.—At first dull white, then tan-colour; fleshy, soft, brittle; head slightly villous, then smooth, clavate, pallid, minutely tuberculate, confluent with the stem.

Frequent in fir woods, among leaves.

#### GENUS XIX. HYPOMYCES Tul.

Mycelium byssoid, colourless or coloured; perithecia small globose, papillate. Parasitic on fungi. There are seven British species, one of which is represented by a model.

202. *H. lateritius* Tul.—This is a microscopic parasite of brick-red colour and of frequent occurrence; it grows as a thick film over the gills of *Lactarius deliciosus*. In its earlier stages it is frosted over with a white powder.

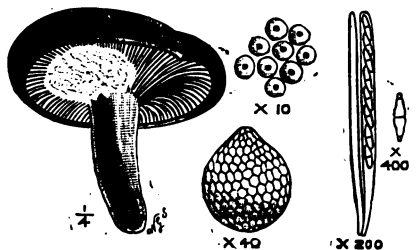


Fig. 84.—*Hypomyces lateritius* Tul. on the gills of *Lactarius deliciosus*. (One-quarter natural size.) Perithecia  $\times 10$ ; single perithecia  $\times 40$ . Ascus and paraphysis  $\times 200$ . Spore  $\times 400$ .

GENUS XX. **XYLARIA** Hill.

Stipitate; stroma corky, rarely fleshy; perithecia immersed. There are eight British species, one of which is represented by a model.

203. **X. polymorpha** Grev.—Clubs turgid, corky, irregular, whitish-cinereous, then black.

A common fungus on old stumps, where it grows gregariously.

*X. hypoxylon* Grev., the "candle-snuff fungus," is a smaller and much more common species. Like *X. polymorpha*, it grows on



Fig. 85.—*Xylaria polymorpha* Grev., and section showing the perithecia. (Natural size.) Ascus  $\times 400$ .

GENUS XXI. **PORONIA** Willd.

Stipitate; stroma between fleshy and corky; fructifying surface discoid; perithecia immersed. The single British species is represented by a model.

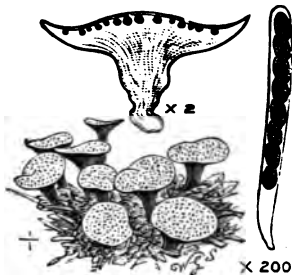


Fig. 86.—*Poronia punctata* Fr. (Natural size.) Section showing perithecia  $\times 2$ . Ascus  $\times 200$ .

204. **P. punctata** Fr.—Stipitate, turbinate, externally blackish; disc truncate, whitish, dotted with the black ostiola.

Gregarious on horse and cow dung.

GENUS XXII. **HYPOXYLON** Bull.

Convex or plane; stroma corky or brittle; perithecia immersed. There are thirteen species in Britain, one of

which is represented by a model.

205. **H. coccineum** Bull.—Globose, about the size of a pea, often becoming confluent, at first pruinose, becoming brownish-vermilion, black within; perithecia ovate with prominent ostiola.

Common on beech, and gregarious.



Fig. 87.—*Hypoxylon concentricum* Grev., and section showing the perithecia. (Natural size.) Ascus  $\times 200$ .

## ORDER III. TUBERACEÆ.

Subterranean fungi; hymenium enclosed by an indehiscent peridium, waved and sinuate, often intricate and closely packed. There are thirteen genera and twenty-five species of British *Tuberaceæ*. The two following species are illustrated by models.

## GENUS XXIII. TUBER Fr.

Peridium warty or tuberculate, rarely smooth, without any definite base; spores elliptical, reticulate, or echinulate.

206. *T. aestivum* Vitt. (British Truffle).—Hard and black at maturity, polygonally warted outside and mottled with white and yellowish-brown inside.

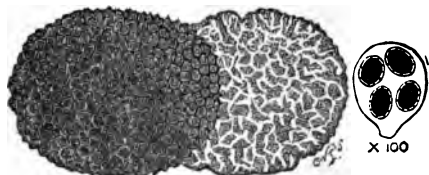


Fig. 88.—*Tuber aestivum* Vitt. and section. (Natural size.) Ascus x 100.

It is usually subterranean, but is seldom found more than three or four inches beneath the surface; it is sometimes half exposed.

It is generally about the size of a walnut, but may attain a diameter of three or more inches. In rare cases single specimens weigh two, three, or four pounds. It is found in perfection from July to late autumn. It grows in copses, hedgerows, and open places in plantations gregariously with other species of *Tuber*, generally in plantations of beech, oak, or birch—rarely pine—on argillaceous or calcareous soil. The odour is potent and to some persons agreeable, and can sometimes be detected above the earth in which truffles grow. Squirrels and pigs are fond of truffles, and scratch them up. Edible, but hard and indigestible.

The truffle of France, used in *pâté de foie gras* and *poulard truffé*, is *Tuber melanosporum* Vitt. The truffle used in Italy is *T. magnatum*, which is garlic-scented. These species have not been recorded as British.

## GENUS XXIV. CHOIROMYCES Vitt.

Integument even; base definite; sporidia spherical.

207. *C. meandri-formis* Vitt. (White Truffle).—Exterior marked with depressions, somewhat like the eyes of a potato. The

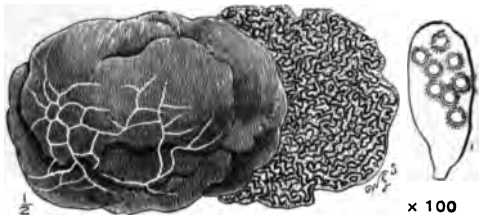


Fig. 89.—*Choiromyces meandriiformis* Vitt. and section. (One-half natural size.) Ascus x 100.

whole plant indeed resembles externally an ordinary pale-skinned potato, both in general colour and size. The interior is marbled with brown and white veins; it becomes yellow in drying. When young scentless, but when mature the odour is very strong, like decaying cheese.

A large species, generally growing in open, hilly places, half buried in stiff soil; it prefers oak plantations, and may be found in summer and autumn. When young this truffle is white; at length it becomes pale buff or brownish.

Esteemed by some, but has been known to produce unpleasant effects when eaten in a raw state.

## MYCETOZOA.

The *Mycetozoa*, or "slime-fungi," of which there are a large number of British genera and species, are represented by models of two species only.\* Although included here with the fungi, they form a distinct group showing affinities with the animal kingdom. There is in the *Mycetozoa* no cellular mycelium as in the true fungi.

### GENUS I. **FULIGO** Hall.

The fruit irregular, formed of intertwined, elongate sporangia, containing an irregular network of threads and the spores. The outer sporangia form a friable, spurious cortex, containing much oxalate of lime. The following is the only British species.

208. **F. varians** Somm. (popularly known as "flowers of tan").—An irregular yellow mass, very variable in size; it becomes at length a dusty mass of violet-black spores. Under favourable conditions the spores will retain their vitality for several years.

Frequent on tan-beds, sawdust, and sometimes on stumps. It is often a great nuisance in hot-houses where tan is used, for the *Fuligo* will sometimes completely cover the tan and entirely stop the growth of the plants under cultivation.

It has been found to contain formic and acetic acids.

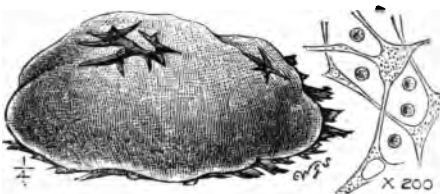


Fig. 92.—*Fuligo varians* Somm. (Natural size.)  
Spores and threads x 200.

\* A collection of British *Mycetozoa*, to which there is a special guide, is shown in the adjoining table-case.

GENUS II. **LYCOGALA** Pers.

The fruit regular, enclosed in a definite cortex and formed of sporangia containing round spores and branching and anastomosing threads, with external thickenings in the shape of irregular rings. There are two British species, one of which is represented by a model.



Fig. 91.—*Lycogala epidendrum* Fr.  
(Natural size.) Spores and threads  
x 600.

209. *L. epidendrum* Fr.—Soft, pulpy, and warted, usually the size of a large pea, and bright pink or rose-colour, varying to greyish clay-colour, purple, and blood-red; pulp within often scarlet, at length becoming a dusty mass of spores, which varies in colour, as does the exterior.

Not uncommon upon dead stumps and branches.

## NAMES OF AUTHORS OF SPECIES.

A. & S.	{ Albertini, J. B. von 1769-1831	Juss.	Jussieu, A. L.	1748-1836
	{ Schweinitz, L. de 1780-1834	L.	Linnæus, C.	1707-1778
B. & Br.	{ Berkeley, M. J. 1803-1889	Lenz, H. O.		1799-1870
	{ Broome, C. E. 1812-1886	Lév.	Léveillé, J. H.	1796-1870
Batsch, A. J. G. K.	1761-1802	Müll.	Müller, O. F.	1730-1784
Berk.	Berkeley, M. J. 1803-1889	Nees.	Nees von Esenbeck, C. G.	1776-1858
Bref.	Brefeld, O. 1839-	Oed.	Oeder, G. C.	1728-1791
Brond.	Brondeau, L. de 1859	Pers.	Persoon, C. H.	1755-1837
Bull.	Bulliard, P. 1742-1793	Phill.	Phillips, W.	1822-1805
Chev.	Chevalier, F. F. 1796-1840	Relh.	Relhan, R.	Born 1753
Corda, A. K. J.	1809-1849	Retz.	Retzius, A. J.	1742-1821
Curt.	Curtis, W. 1746-1799	Schæff.	Schæffer, J. C.	1718-1790
DC.	de Candolle, A. P. 1778-1841	Schum.	Schumacher, C. F.	1757-1830
Desm.	Desmazières, J. B. 1786-1862	Scop.	Scopoli, J. A.	1723-1788
Ehrh.	Ehrhart, F. 1742-1795	Sm.	Smith, J. E.	1759-1828
Fr.	Fries, E. M. 1794-1878	Somm.	Sommerfelt, S. C.	1794-1838
Fuckel, K. W. G. L.	1821-1876	Sow.	Sowerby, J.	1757-1822
Grev.	Greville, R. K. 1794-1866	Sw.	Swartz, O.	1760-1818
Hall.	Haller, A. von 1708-1777	Tode, H. J.		1733-1797
Halle, J. S.	1727-1820	Tul.	Tulasne, L. R.	1815-1858
Hill, J.	1716-1775	Vahl, M.		1749-1804
Hoffm.	Hoffmann, G. F. 1761-1826	Vitt.	Vittadini, C.	1800-1865
Holmsk.	Holmskiöld, T. 1732-1794	Wallr.	Wallroth, K. F. W.	1792-1857
Hornem.	Hornemann, J. W. 1770-1841	Willd.	Willdenow, K. L.	1765-1812
Huds.	Hudson, W. 1730-1793	With.	Withering, W.	1741-1799
Jacq.	Jacquin, Baron von 1766-1839			

## GLOSSARY

- Adnate** (*adnascor*, to grow to), gills broadly attached to the stem.
- Adnexed** (*ad*, to ; *necto*, to join), gills slightly joined to the stem.
- Anastomosing** (Gr. *anastomosis*, a bringing to a point), uniting by running together irregularly.
- Annular**, in the form of a ring.
- Annulate**, bearing a ring on the stem.
- Annulus** (*annulus*, a ring), the ring round the stem.
- Applanate** (*ad*, to ; *planatus*, made flat), flattened.
- Arachnoid** (Gr. *arachne*, a spider's web ; *eidōs*, resemblance), like a cobweb.
- Arcuate** (*arcuatus*, bent like a bow), gills bow-shaped.
- Ascus** (Gr. *askos*, a wine skin), a large cell, usually the swollen end of a hypha, in which spores are borne.
- Basidium** (*basidium*, a little pedestal), the mother cell which bears the spores in *Hymenomycetes* and *Gasteromycetes*.
- Bifid** (*bifidus*, twice-cleft), divided half-way into two.
- Bullate** (*bullā*, a bubble), furnished with a boss or stud.
- Byssoid** (*byssus*, fine flax), composed of fine threads.
- Cæspitose** (*cæspes*, a clump), growing in tufts.
- Campanulate** (*campana*, a bell), bell-shaped.
- Capillitium** (*capillus*, a hair), the dense mass of sterile fibres which is mixed with the spores in the gleba of the *Gasteromycetes*.
- Ciliate** (*cilium*, an eye-lash), fringed with hairs.
- Cinereous** (*cinis*, ashes), ash-coloured.
- Clavate** (*clava*, a club), club-shaped.
- Columella** (*columella*, a small pillar), the small columnar base of barren tissue in *Lycoperdon*, *Geaster*, etc.
- Conchiform** (*concha*, a shell), shell-shaped.
- Concrete** (*concretus*, growing together), as when the scales adhere to the flesh of the pileus.
- Conidia** (Gr. *konis*, dust), simple asexual spores.
- Connate** (*con*, together ; *nascor*, to be born), united by growing together.
- Coriaceous** (*corium*, leather), leathery.
- Cortex** (bark or rind), the periderm in the *Gasteromycetes*.
- Cortina** (*cortina*, a veil), a veil of spider-web structure as in *Cortinarius*.
- Cortinate**, furnished with a veil.
- Costate** (*costatus*, ribbed), ribbed or veined.
- Crenate** (*crena*, a notch), with rounded notches on the margin.
- Crenulate**, with small rounded notches.
- Cupulate** (*cupula*, a little cup), cup-shaped.
- Cuticle** (*cuticula*, the outer skin), the outermost skin.
- Decumbent** (*decumbo*, to recline), reclining but with summit ascending.
- Decurrent** (*decurro*, to run down), of gills and tubes running down the stem in the *Agaricaceæ*, *Polyporaceæ*, etc.



**Dehiscing** (*dehisco*, to yawn), opening when ripe.

**Depressed** (*depressus*, sunk down), slightly hollowed.

**Determinate** (*determino*, to limit), ending definitely, as in the margin of some species of *Corticium*, etc., not powdered or clouded off indefinitely.

**Delliquescent** (*delliquescent*, melting away), becoming fluid when mature.

**Dimidiate** (*dimidio*, to halve), as when one part of an organ is smaller than the other, as in the pilei of many fungi.

**Disciform** (*discus*, a quoit), circular and flat.

**Distant**, of gills in the *Agaricaceæ* with a wide distance between them.

**Echinulate** (*echinus*, a hedgehog), with short bristles.

**Emarginate** (*e*, out of; *margo*, the margin), with gills with a sudden curve as if scooped out of the point of attachment to the stem.

**Evanescent** (*evanescent*, disappearing), lasting only a short time.

**Excipulus** (*excipula*, a basin), the rim round the base of the apothecium.

**Farinose** (*farina*, meal), mealy.

**Fasciculate** (*fascis*, a bundle), growing in small bundles.

**Ferruginous** (*ferrum*, iron), of the colour of rust of iron.

**Fibrillose** (*fibra*, a fibre), clothed with small fibres.

**Filiform** (*filum*, a thread), thread-like.

**Fimbriate** (*fimbria*, a fringe), fringed.

**Fistulose** (*fistula*, a pipe), hollow in the centre like a pipe.

**Flocci** (*floccus*, a lock of wool), woolly locks.

**Floccose**, woolly.

**Flocculent**, diminutive of floccose.

**Flocculose**, covered with small flocci.

**Free**, of gills which reach the stem, but are not attached to it.

**Fuliginous** (*fuliginous*, sooty), soot-coloured.

**Furfuraceous** (*furfur*, bran), with branny scales or scurf.

**Fuscous** (*fuscus*, dusky), of a dingy brownish colour.

**Gibbous** (*gibbus*, hump-backed), of a pileus with a swelling or broad umbo, or convex above and flat beneath.

**Gills**, the plates of an agaric on which the hymenium is situated.

**Gleba** (*gleba*, a clod), the contents of the peridium in the *Gasteromycetes*.

**Glabrous** (*glaber*, without hair), destitute of pubescence.

**Gregarious** (*gregarius*, belonging to a flock), growing in company, but not cæspitose.

**Gyrose** (Gr. *gyros*, round), curved backward and forward in turn.

**Habit** (*habitus*, appearance), the general appearance.

**Habitat** (*habitatio*, dwelling), the locality.

**Heterogeneous** (Gr. *heteros*, one of two; *gennao*, to beget), not uniform in structure.

**Homogeneous** (Gr. *homos*, one and the same; *gennao*, to beget), uniform in structure.

**Hyaline** (Gr. *hualos*, clear), colourless, translucent.

**Hygrometric** (Gr. *hugros*, moist; *metron*, a measure), influenced by moisture.

**Hygrophanous** (Gr. *hugros*, moist; *phaino*, to appear), of a watery appearance when moist.

**Hymenium** (Gr. *humen*, a membrane), the spore-bearing surface.

**Hypha** (Gr. *huphe*, a web), pl. *hyphæ*, the thread-like elements of which a fungus is made up.

**Imbricate** (*imbricatus*, covered with tiles), overlapping, as the tiles on a roof.

**Immarginate** (*in*, negative; *margo*, a margin), without a distinct border.

**Immersed** (*immergo*, to immerse), sunk in the matrix.

**Inferlor** (*inferior*, lower), of the annulus on the stem, far down.

**Infundibuliform** (*infundibulum*, a funnel), funnel-shaped.

**Innate** (*in*, into; *nascor*, to be born), adhering by growing into.

**Involute** (*in*, in; *volvo*, to roll), rolled inwards.

**Laciniate** (*lacinia*, a lappet, flap), divided into flaps.

**Lacunose** (*lacuna*, a hole or cavity), marked with small hollows.

**Lamellæ** (*lamella*, a thin plate), the gills of an agaric.

**Lanceolate** (*lancea*, a lance or spear), lance-shaped; narrow and tapering to both ends.

**Linear** (*linea*, a line), narrow and straight, several times longer than wide.

**Marginate** (*margo*, a margin), having a distinct border.

**Mitrate** (Gr. *mitra*, a head-dress), with thick rounded pileus.

**Mucedinous** (*mucedus*, mouldy), of the nature of the group of Fungi named *Mucedines*—naked-spored moulds.

**Multifid** (*multifidus*, many-cleft), divided half-way into many lobes.

**Multipartite** (*multipartitus*, many times divided), divided many times and more deeply than multifid.

**Mycellum** (Gr. *mukes*, a fungus), spawn of fungi, the vegetative portion, composed of hyphæ.

**Obconic** (*ob*, inversely; *conus*, a cone), inversely conical.

**Obovate** (*ob*, inversely; *ovum*, an egg), inversely egg-shaped.

**Obtuse** (*obtusus*, blunt or rounded at the end).

**Ochreous** (*ochra*, yellow-earth), yellow.

**Operculum** (*operculum*, a lid), a cover.

**Ostiolum** (*ostiolum*, a little door), the aperture through which the spores escape in the *Gasteromycetes*.

**Ovate** (*ovum*, an egg), egg-shaped.

**Papilla** (*papilla*, a nipple), a nipple-like elevation.

**Papillate**, **Papillose**, with nipple-like elevations.

**Paraphyses** (Gr. *para*, beside; *phusis*, growth), sterile filaments in a hymenium.

**Partial**, of a veil, clothing the stem and reaching to the edge of the pileus, but not extending beyond it.

**Patelliform** (*patella*, a small dish), dish-shaped.

**Pellicle** (*pellicula*, a small skin), a delicate superficial membrane.

**Peridiola**, diminutive of peridium.

**Peridium** (Gr. *peridion*, a little pouch), the outer enveloping coat in the *Gasteromycetes*, enclosing the gleba.

**Perithecium** (Gr. *peri*, about; *theke*, a case), a receptacle enclosing spores.

**Peronate** (*pero*, a kind of high boot), sheathed; of a stem, *e.g.*, which has a woolly covering like a legged boot.

**Pileate**, with a cap.

**Pileus** (*pileus*, a cap), a part of the receptacle of a fungus, *e.g.* the cap-like head in *Agaricus*.

**Pilose** (*pilus*, a hair), covered with hairs.

**Plasmodium** (Gr. *plasma*, formed substance), the naked nucleated protoplasm of the Mycetozoa.

**Plicate** (*plico*, to fold), folded into plaits.

**Piumose** (*plumosus*, feathered).

**Protoplasm** (Gr. *protos*, first ; *plasma*, formed substance), the living substance of plants and animals.

**Pruinose** (*pruina*, hoar-frost), covered with frost-like bloom.

**Pubescent** (*puber*, downy), slightly hairy.

**Pulverulent** (*pulverulentus*, dusty), powdered as if dusted over.

**Pulvinate** (*pulvinus*, a cushion), cushion-shaped.

**Pyriform** (*pyrus*, a pear), pear-shaped.

**Radiate** (*radius*, the spoke of a wheel), spreading from a centre.

**Receptacle** (*receptaculum*, a reservoir), an axis bearing one or more organs as the stem upon which the hymenium is elevated in the *Phalloidaceæ*.

**Remote** (*removeo*, to remove), of gills which do not reach the stem, but leave a free space round it.

**Reniform** (*renes*, the kidneys), kidney-shaped.

**Repand** (*repando*, to throw open), bent backwards.

**Resupinate** (*resupino*, to throw on the back), with hymenium upwards.

**Reticulate** (*rete*, a net), netted.

**Revolute** (*revolvo*, to roll back), rolled backwards ; of the margin of a pileus—the opposite of involute.

**Rimose** (*rima*, a crack), cracked.

**Ring**, a part of the veil adhering to the stem in the form of a ring or annulus.

**Rivulose** (*rivula*, a small stream), marked with lines like rivulets.

**Rounded**, applied to gills and tubes rounded near point of contact with the stem.

**Rubiginous** (*rubigo*, rust), colour of iron-rust

**Rufescent** (*rufescens*, becoming reddish).

**Rufous** (*rufus*, reddish).

**Rugose** (*ruga*, a wrinkle), wrinkled.

**Rugulose**, somewhat wrinkled.

**Scales**, applied to the broken-up epidermis of the pileus and stem.

**Sclerotium** (Gr. *skleros*, hard), a compact mass of hyphæ in a dormant state.

**Separating**, becoming detached, as gills from a stem, or resupinate fungi from the matrix.

**Septate**, divided.

**Septum** (*septum*, a hedge), a division.

**Serrate** (*serra*, a saw), toothed like a saw.

**Serrulate**, minutely toothed.

**Sessile** (*sedeo*, to sit), without a stem.

**Setæ** (*seta*, a bristle).

**Setulose** (*seta*, a bristle), resembling a fine bristle.

**Simple**, applied to a stem without ring or volva.

**Sinus** (*sinus*, a curve).

**Sinuate**, waved ; of a pileus with a wavy or curved margin ; of gills with a sudden wave, curve or sinus where they reach the stem.

**Smooth**, applied to a surface which is destitute of hairs.]

**Spathulate** (Gr. *spathe*, a spatula), spoon-like.

**Spawn** : see Mycelium.

**Spinulose** (*spina*, a thorn), bearing fine spines.

**Spores** (Gr. *spora*, a seed), the analogues of seeds of flowering plants.

**Sporangium** (Gr. *spora*, a seed ; *ageion*, a vessel) a spore-bearing receptacle.

**Sporophore** (Gr. *spora*, a seed ; *phoreo*, to carry), the part which bears the hymenial surface.

**Squamose** (*squama*, a scale), scaly.

**Squamule**, a small scale.

**Squamulose**, covered with small scales,

**Squarrose** (*squarrosus*, rough, scurfy), rough with scales.

**Sterigma**, pl. **sterigmata** (Gr. *sterigma*, a prop), the slender thread which carries a spore.

**Stipes** (*stipes*, a stalk).

**Stipitate**, stemmed.

**Striate** (*stria*, a furrow ; flute of a column), marked with lines in the form of channels.

**Strigose** (*striga*, a swathe), rough with sharp pointed hairs, hispid.

**Stroma** (Gr. *stroma*, a mattress), a cushion-like structure in which the perithecia of some fungi are immersed.

**Stuffed**, of a stem, filled with substance of a different texture from its walls.

**Sulcate** (*sualcus*, a furrow), marked with grooves.

**Superior** (*super*, above), applied to the annulus when it is near the apex of the stem.

**Tetrasporous** (Gr. *tetras*, four ; *spora*, a seed), bearing four spores.

**Tomentose** (*tomentum*, wool, etc.), downy.

**Truncate** (*trunco*, to maim), ending abruptly as if cut short.

**Tubiform** (*tuba*, a trumpet), trumpet-shaped.

**Tubercle** (*tuberculum*, a little tuber), a small wart-like excrescence.

**Tuberculate**, with small warty projections or excrescences.

**Tuberculiform**, resembling a little tuber.

**Turbinate** (*turbinatus*, cone-shaped), top-shaped.

**Umbilicate** (*umbilicus*, the navel), with a small central depression.

**Umbonate** (*umbo*, the boss of a shield), with a central boss-like elevation.

**Universal** (*universus*, whole), of the veil or volva which entirely envelops the fungus when young.

**Urceolate** (*urceola*, a pitcher), pitcher-like, hollow and contracted at the mouth like an urn or pitcher.

**Veil** (*velum*, a covering), a covering of various texture more or less completely enwrapping a fungus when young.

**Venose** (*venosus*, veiny), having veins.

**Ventricose** (*venter*, the belly), swollen in the middle.

**Verrucose** (*verruca*, a wart), warty.

**Villous** (*villus*, a tuft of hair), downy with soft hairs.

**Vinous** (*vinum*, wine), of the colour of claret, dark or dilute.

**Volva** (*volva*, a wrapper), a covering or sac enveloping the young fungus.

**Volvate**, having a volva.

**Zone** (*zona*, a girdle), a circle of hairs, asperities, colour, etc.

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HAZELL, WATSON AND VINEY, LD.,  
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